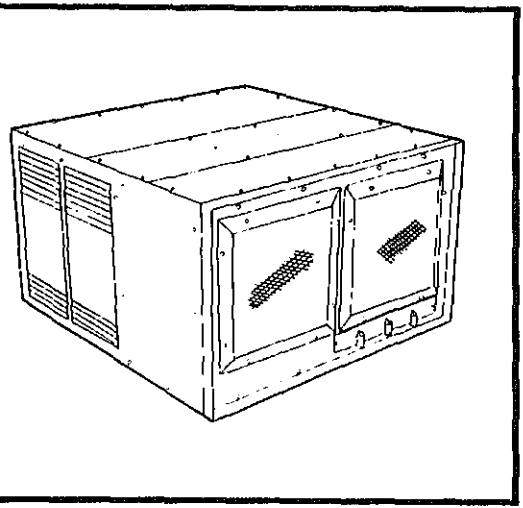
ATOR'S, ORGANIZATIONAL,
AND DIRECT SUPPORT
MAINTENANCE MANUAL

AIR CONDITIONER
000 BTU/HR COOLING



(HOTTEL MODEL HAC-751)
(4120-01-085-4732)

This copy is a reprint which includes current pages from Change 1.

(HOTTEL MODEL HAC-751)
94120-01-085-4732)

TM 5-4120-341-13, 13 March 1981, is changed as follows:

1. The U.S. Air Force number is being added to this manual. All future
es or revisions will include the U.S. Air Force.

2. Remove and insert pages as indicated below. New or changed text mat
indicated by a vertical bar in the margin. An illustration change is indi
a miniature pointing hand.

Remove pages	Insert pages
i and ii	i and ii
F-1 and F-2	F-1 and F-2
---	F-3/F-4

3. Retain this sheet in front of manual for reference purposes.

Order of the Secretaries of the Army and the Air Force:

CARL E. VUONO
General, United States Army
Chief of Staff

icial:

R. L. DILWORTH
gadier General, United States Army
The Adjutant General

LARRY E. WELSH, *Gene*
Chief of Staff

icial:

ALFRED G. HANSEN
eral, USAF, Commander, Air Force
Logistics Command

Disconnect the power source before performing any maintenance function.

Dry cleaning solvent, P-D-680 or P-S-661, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100° F (38°C).

Death or serious injury may occur if capacitor is not discharged prior to removal.

Avoid bodily contact with liquid refrigerant and avoid inhaling refrigerant gas. Be especially careful that Refrigerant 12 does not come in contact with eyes. In case of refrigerant leaks, ventilate area immediately.

Do not use compressed air for cleaning purposes except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

Purge system with dry nitrogen prior to soldering. Refrigerant heated to 1200° F creates phosgene gas.

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

ou can help improve this manual. If you find any mistakes or if you know f a way to improve the procedures, please let us know. Reports shall be ubmitted as follows: A reply will be furnished to you.
A) Army - DA Form 2028 (Recommended Changes to Publications and Blank orms), or DA Form 2028-2 located in the back of this manual direct to ommander, U. S. Army Troop Support Command, ATTN: AMSTR-MCTS, 4300 oodfellow Boulevard, St. Louis, MO 63120-1798 .
F) Air Force - AFTO Form 22 directly to: Commander, Sacramento Air ogistics Center, ATTN: MMST, McClellan Air Force Base, CA 95652 in ccordance with TO-00-5-1.

PTER OVERVIEW

urpose of this chapter is two-fold:

To provide you with the standard data required in all manuals (i.e. forms and record data).

To acquaint you with the air conditioner. This is done by giving you a physical and fun
ption of those major equipment parts that you are likely to come in contact with.

Section I. GENERAL INFORMATION

SCOPE

of Manual: Operator's, Organizational, and Direct Support Maintenance

l Number and Equipment Name: HAC-751 Air Conditioner: Floor Mounted, Air Cooled, E
r Driven, 3/4 HP, 60 Hertz AC, Single Phase, 9,000 BTU/HR

ose of Equipment: Provide filtered, cooled air to a desired predetermined range and circulating
ovide cooling of equipment or personnel within the air conditioned area.

MAINTENANCE FORMS AND RECORDS

rtment of the Army forms and procedures used for equipment maintenance will be those pre
M 38-750, the Army Maintenance Management Systems (TAMMS).

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

to TM 750-244-3, Procedures for Destruction of Equipment to Prevent Enemy Use, for infor
destruction.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs)

ur air conditioner needs improvement, let us know. Send us an EIR. You, the user, are the o
can tell us what you don't like about your equipment. Let us know why you don't like the desi
ny a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it dir
mander, U.S. Army Troop and Aviation Materiel Readiness Command, ATTN: DRSTS-MEM
fellow Boulevard, St. Louis, MO 63120.

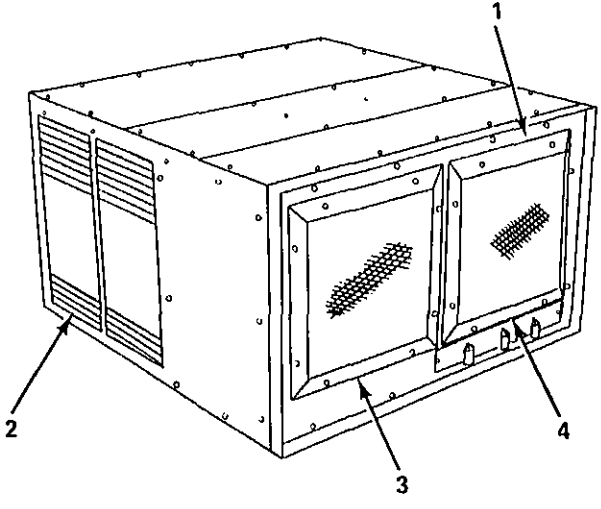
LIST OF ABBREVIATIONS

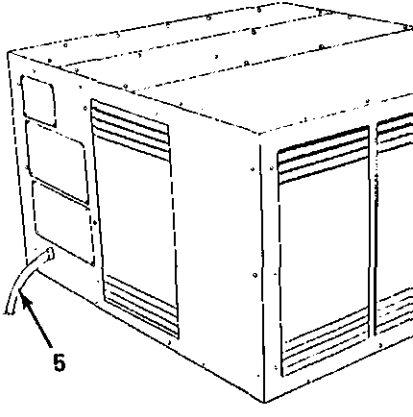
	ampere	I	
/HR	British Thermal Units Per Hour	lb	
	Celsius	OD	Outside D
PR	Compressor	psi	pounds per squa

4. Compressor
5. Evaporator coil, expansion valves, and piping
6. Condenser coil, dehydrator, valves and piping

1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

1. Return Air Grill - Adjustable and controls the amount of air passing through the air condi
2. Condenser Inlet - Directs flow of air to condenser.
3. Air Diffuser Grill - Directs flow of evaporator outlet air.
4. Control Panel - Contains all control switches.
5. Power Cable - For connection to 115 volts, 60 Hz, single phase power source.





Air Conditioner, Floor Mounted, 9,000 BTU/HR, 115 Volts, Single Phase, 60 Hertz.

Manufacturer	Harvey W. Hottel, Incorporate
National Stock Number	4120-01-085-473
Model	HAC-75
Length	27 5/8 in. (701.675mm
Width	26 1/2 in. (673.1 mm
Height	15 5/8 in. (396.875 mm
Capacity	9,000 BTU/H
Weight	153 lbs. (69.40 kg

Compressor (B1).

Manufacturer	Hupp, Incorporate
Model	EH751A255
Military Part Number	13221E455
Volts	11
Hertz	50/6
Phase	Singl
Weight (with oil)	70 pound

Fan Motor (B2).

Manufacturer	Dayton Electric Mfg. Company
Model	3M064
Military Part Number	13221E458
Volts	11
Phase	Singl
RPM	1250/155
Horsepower	1/
Duty	Continuou
Motor Drive	Direc
Thermal Protector	Automatic reset type open at 165°C (329°
Rotation (lead end)	Counterclockwis

Start Capacitor (C1).

Manufacturer	Cornell Dubilier Electronic
Part Number	ETW460-12
Military Part Number	13221E458
Type	Fixed aluminum electrolyti
Capacitance	500mfd± 8
Working Voltage	125 Va

Run Capacitor (C2).

Manufacturer	General Electric Company
Part Number	21L300
Type	Fixed pape
Capacitance	7.5 mf
Working Voltage	37

tart Relay (K1).

Manufacturer	General Electric Compa
Part Number	3ARR3B-2
Military Part Number	13221E45
Type	Volt
Contacts Open	140 to 153 volts at 35°C (95°F), 150 to 160 volts at 95°C (203°
Contacts Close	20 to 45 vo

Rotary Selector Switch (S1).

Manufacturer	Oak Industries, Incorpora
Part Number	240T6H
Military Part Number	13221E45
Type	SP
Number of Switch Positions	

Thermostat (S2).

Manufacturer	Ran
Part Number	A30-17
Military Part Number	13221E45
Type	SPST, normally clos
Contacts Close (temp. drop)	69°F to 71°F (20.6°C to 21.7°

xpansion Valve

Manufacturer	The Singer Co., Controls Divis
Part Number	223-1
Military Part Number	13221E45
Inlet	1/4 O
Outlet	1/2 O
Cap. Tube Length	60 in. (1,524 m
Nominal Capacity	1/2
Superheat (factory set)	8 1/2°F to 9 1/2°F bath temperature (-13°C to 12.5 at a 0°C bath temperatu

Sight Glass.

Manufacturer	Mueller Brass
Part Number	A159
Military Part Number	13221E45

PERFORMANCE DATA (DIRECT SUPPORT MAINTENANCE)

Dehydrator

Manufacturer	Spor
Part Number	CO
Military Part Number	13214E35

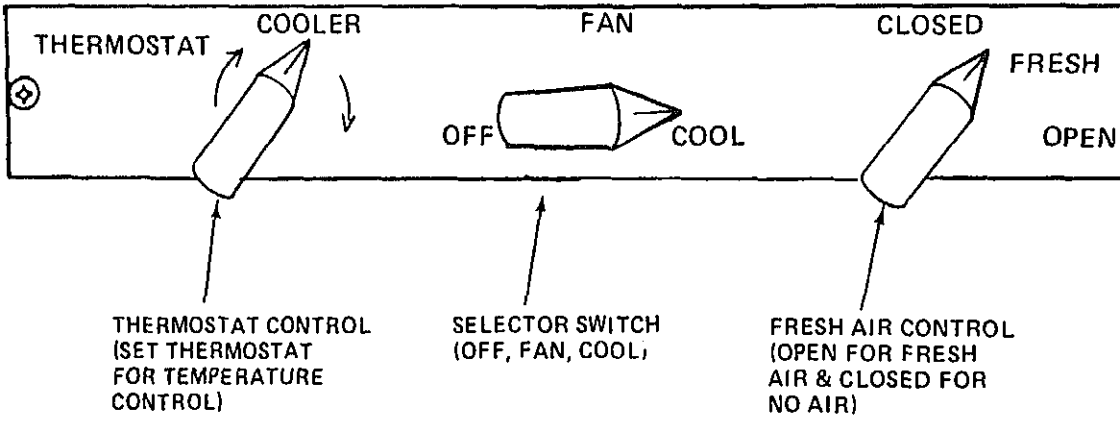
Refrigerant Service Valves.

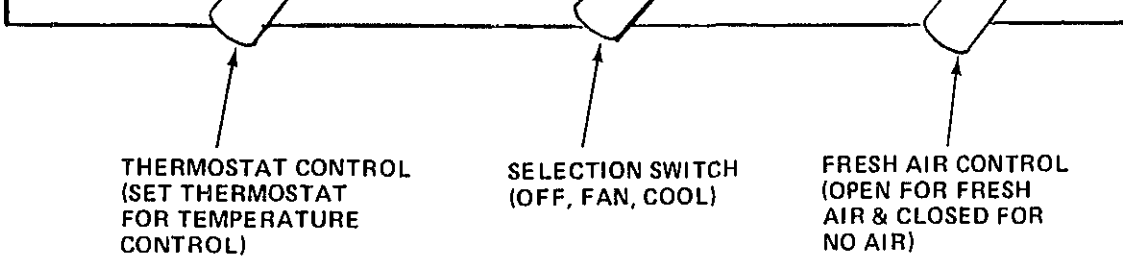
Manufacturer	Robinair Mfg. Corporat
Part Number	V2

The air conditioner is a floor-mounted, self-contained, electric motor driven unit that provi
BTU/HR for cooling. Once started, it operates automatically due to the relationship of the co
controls and instruments.

1-13. COOLING

With the selector switch in the COOL position the fan motor and the compressor are energized
motor and compressor run continuously. The flow within the refrigerant circuit determines t
mode of unit. With the fan motor and compressor operating, the flow within the refrigerant
controlled by the THERMOSTAT switch.




THERMOSTAT CONTROL
(SET THERMOSTAT
FOR TEMPERATURE
CONTROL)
SELECTION SWITCH
(OFF, FAN, COOL)
FRESH AIR CONTROL
(OPEN FOR FRESH
AIR & CLOSED FOR
NO AIR)

to operate the air conditioner. For your convenience, below is an index of this chapter.

INDEX

After you operate. Be sure to perform (A) PMCS after operation.

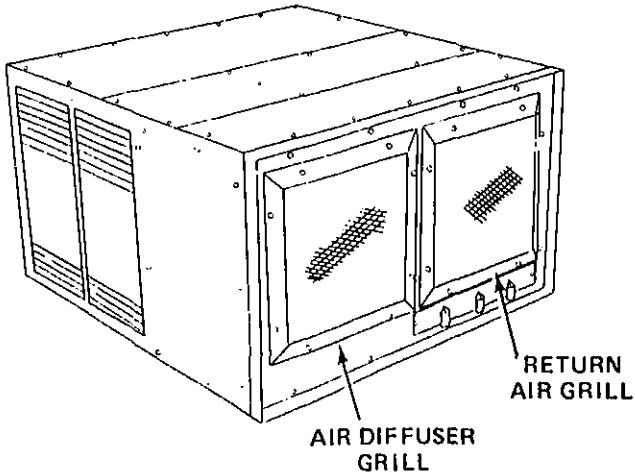
If your equipment fails to operate. Troubleshoot with proper equipment. Report any deficiencies
proper forms, see TM 38-750.

2. OPERATOR/CREW PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

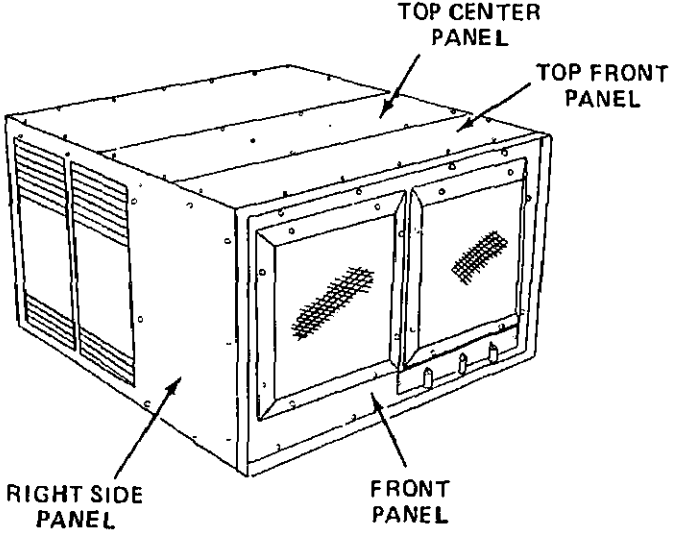
NOTE

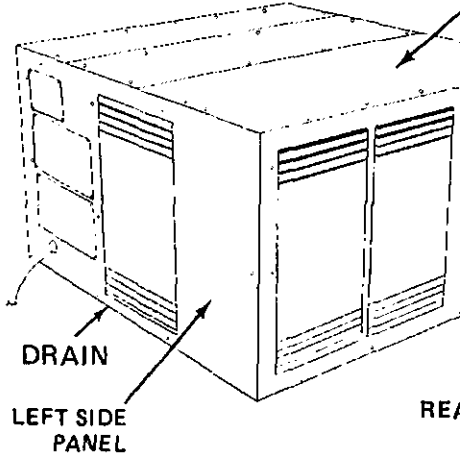
If the equipment must be kept on continuous operation, check and service only those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

				organizational maintenance personnel.
2	●	●	Return Air Grill	Inspect for cleanliness, obstructions, damage, and security of attachment. Rotate FRESH AIR control to adjust return air grill.

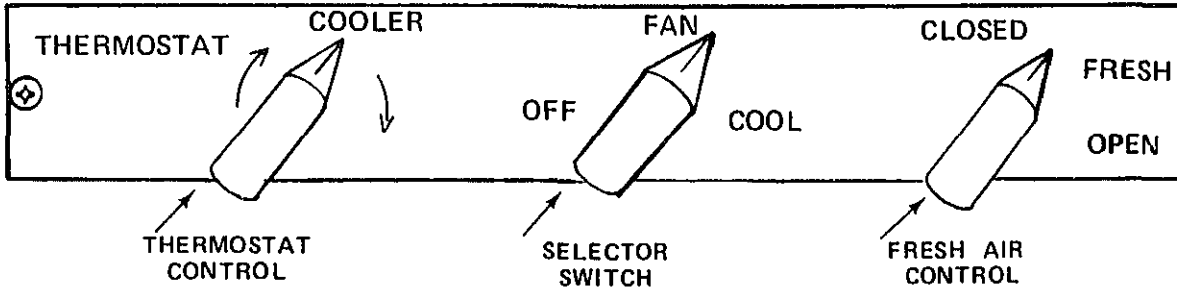


Item No.	Interval B	Interval D	Interval A	Item to be Inspected	Procedures Check For and Have Repaired or Adjusted As Necessary	For Readiness Re Equipment is Not Available If
3	●		●	Housing Panels	Inspect for security of attachment and cleanliness. Report damaged condition to organizational maintenance personnel.	
4	●		●	Drains	Inspect drains for obstructions. Remove obstructions as required.	





5	●			Switches	Insure knobs are in place and check to see that switches function properly. Report damaged condition to organizational maintenance personnel.



NOTE

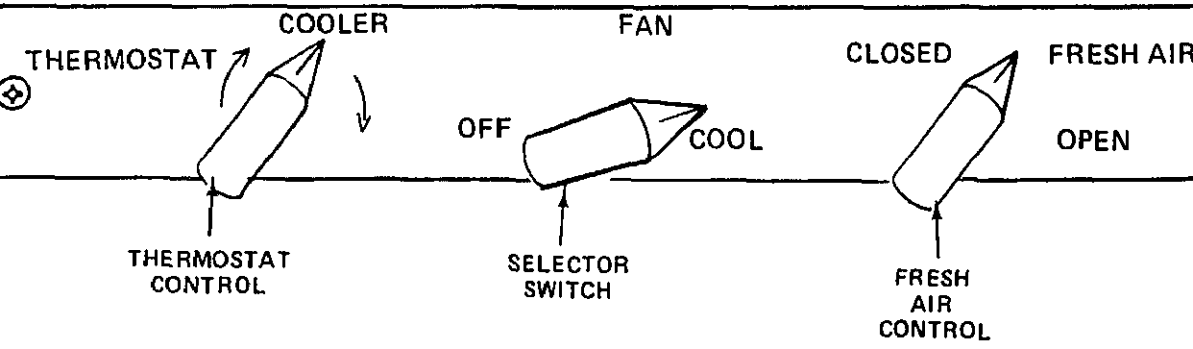
Only the COOLER position for the THERMOSTAT is marked on the front panel.

2. Set THERMOSTAT control to desired temperature.

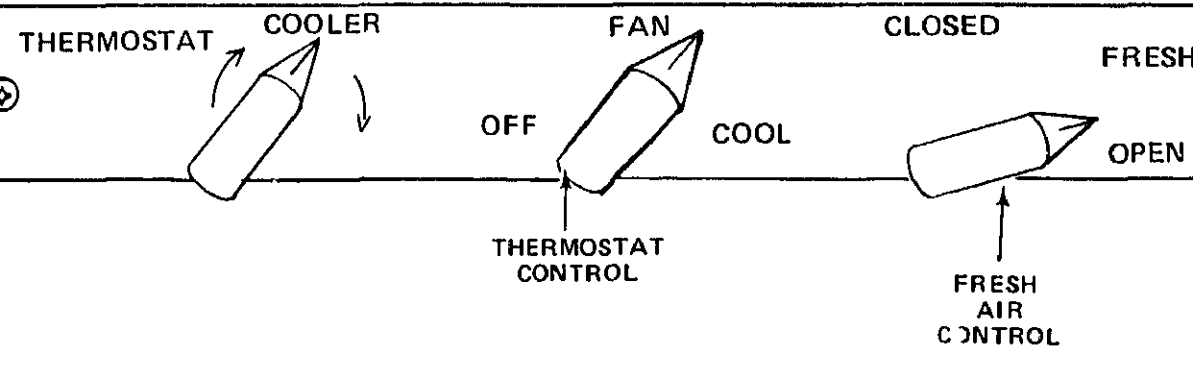
3. Place FRESH AIR control in desired position (OPEN for fresh air and CLOSED for no air).

4. Place selector switch in the FAN position to start fans.

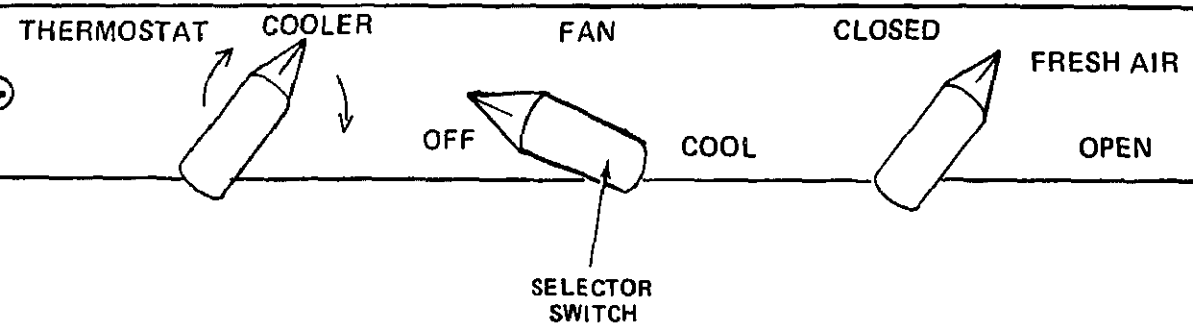
5. Place selector switch in the COOL position. When the temperature in the area is above that of ERMOSTAT setting, the air conditioner will provide cooling air.

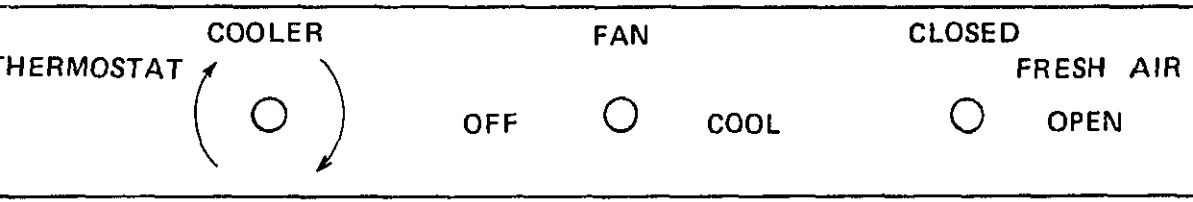


3. Place selector switch in the FAN position.



2. Place FRESH AIR control in the CLOSED position.





U. S. ARMY TROOP SUPPORT COMMAND

AIR CONDITIONER: FLOOR MTG; AIR COOLED; ELECTRIC MOTOR DRIVEN, 3/4-HP AC 115V, SINGLE PHASE, 60 HZ: 9000BTU/HR

NSN 4120-01-085-4732

PART NO. ASSY 97403-13221E4580

MFD BY HARVEY W. HOTTEL, INC.

CONTRACT NO. DAAJ09-79-C-5143

DATE

SERIAL NO. WT LB

b. Filters. To maintain the highest capacity of the unit, the return air filter and fresh air screen sho
e cleaned weekly or more often if necessary. Dirty filters reduce the flow of air across the evaporator c
nereby reducing the capacity of the air conditioner.

c. Grills and Louvers. Keep all grills and louvers clean and free of any obstructions to maintain full
ow through the air conditioner.

d. Coils. Clean evaporator and condenser coils as frequently as necessary to prevent dirt or other ma
rom obstructing the air flow.

2-9. OPERATION IN DUSTY OR SANDY AREAS

a. Protection. Shield the air conditioner from dust as much as possible. Take advantage of any natu
arriers which offer protection.

b. Cleaning. Keep the air conditioner as clean as possible. Pay particular attention to the louvers, filte
oils, electrical components and grills.

c. Air Filters and Coils.

(1) Under extremely dusty or sandy conditions, the louvers, coils, electrical components and grills m
e serviced more often.

NOTE

Never operate the unit without having the air filters in place.

(2) The condenser coil is subjected to ambient air. Therefore, it requires cleaning more often than
vaporator coil.

wiring or other electrical parts.

2-11. OPERATION IN SALT WATER AREAS

a. General. Wash the exterior and condenser section or the unit, particularly condenser a louver control mechanism, with clean fresh water at frequent intervals. Be careful not to dama system with water. Special attention must be given to prevent rust and corrosion.

WARNING

Disconnect power source prior to washing the air conditioner.

b. Painting. Paint all exposed areas where paint has cracked, peeled or blistered or report c organizational maintenance. Coat all exposed areas of polished metal with a light coat of grease.

INDEX

Section I. LUBRICATION INSTRUCTIONS

. No lubrication is required.

Section II. TROUBLESHOOTING

. GENERAL

. This section provides information useful in diagnosing and correcting unsatisfactory oper ure of the air conditioner. Each malfunction is followed by a list of probable causes and actions t *pedy the malfunction. You should perform the tests/inspections and corrective actions in the ord* . This manual cannot list all malfunctions that may occur; nor all tests or inspections and c ons. If a malfunction is not listed or is not corrected by listed corrective actions, notify your superv

. TROUBLESHOOTING TABLE

Malfunction Test or Inspection Corrective Action
AIR CONDITIONER
AIR CONDITIONER FAILS TO OPERATE
Step 1. Check to see if main power cord is plugged in. Connect power cable to receptacle supplying 115 VAC, single phase, 60 Hz power.
Step 2. Check to see if selector switch is in OFF position. Place selector switch in FAN or COOL position.
INSUFFICIENT COOLING
Step 1. Check to see if selector switch is in COOL position. Place selector switch in COOL position.

3-4. GENERAL

The following information pertains to all procedures for the operator.

INITIAL SETUP

Applicable Configurations
All

Test Equipment
None

Special Tools
None

Personnel Required
Operator

Special Environmental Conditions
None

General Safety Instructions
Disconnect the power source before performin
maintenance function. Do not use compresse
for cleaning purposes except where reduced t
than 30 psi and then only with effective
guarding and personal protective equipment.

Top Center Panel
Top Rear Panel
Right Side Panel
Rear Panel
Dry Cleaning Solvent

None

Approximate Time Required (in minutes)

Inspection and Service	15
TOTAL TIME	15

LOCATION/ITEM	REMARKS	ACTION

NSPECTION AND SERVICE

RONT OF HOUSING

WARNING

Dry cleaning solvent, P-D-680 or P-S-661, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100° F (38° C).

. Front Panel

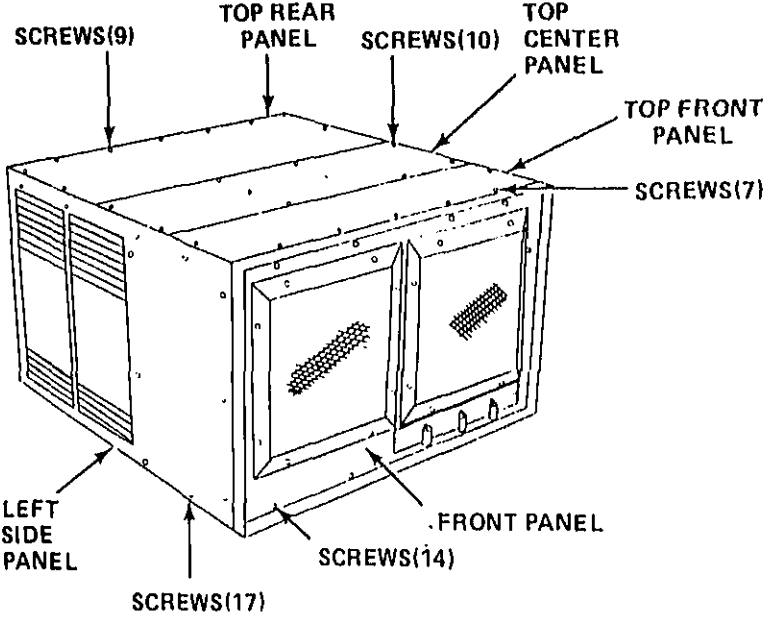
a. Brush off any loose dirt or foreign from front panel.
b. Wipe off front panel with a cloth mo with dry cleaning solvent, P-D-680 or P
c. Inspect front panel for security of atta and damage.
d. Report damaged condition to organi maintenance personnel.

. Left Side Panel

a. Brush off any loose dirt or foreign from left side panel.
b. Wipe off left side panel with moistened with dry cleaning solvent, or P-S-661.
c. Inspect left side panel for secu attachment and damage.
d. Report damaged condition to organi maintenance personnel.

3. Top Panels

a. Brush off any loose dirt or fore
from top panels.
b. Wipe off top panels with a cloth
with dry cleaning solvent, P-D-680
c. Inspect top panels for security of
and damage.
d. Report damaged condition to org
maintenance personnel.



WARNING

Dry cleaning solvent, P-D-680 or P-S-661, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100°F (38°C).

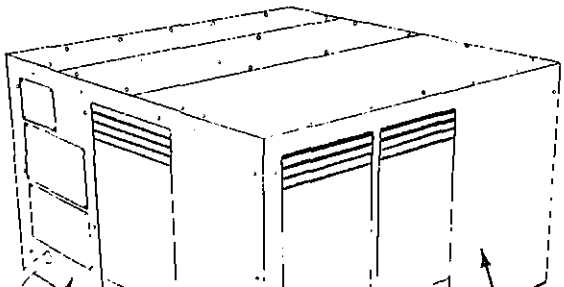
4. Rear Panel

a. Brush off any loose dirt or foreig from rear panel.
b. Wipe off rear panel with a cloth n with dry cleaning solvent, P-D-680 or
c. Inspect rear panel for security of at and damage.
d. Report damaged condition to orgar maintenance personnel.

RIGHT SIDE OF HOUSING

5. Right Side Panel

a. Brush off any loose dirt or foreig from right side panel.
b. Wipe off right side panel with moistened with dry cleaning solvent, or P-S-661.
c. Inspect right side panel for sec attachment and damage.
d. Report damaged condition to orgar maintenance personnel.



IAL SETUP

Material/Parts
- Air Diffuser Grill
- Return Air Grill
- Dry Cleaning Solvent

References
- None

Troubleshooting Reference
- AIR CONDITIONER, Malfunction 2, Step

Approximate Time Required (in minutes)

Inspection and Service	15
Adjustment	5
TOTAL TIME	20

LOCATION/ITEM	REMARKS	ACTION

PECTION AND SERVICE

ONT OF HOUSING

WARNING

Dry cleaning solvent, P-D-680 or P-S-661, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near flame or excessive heat. Flash point of solvent is 100° F (38°C).

Air Diffuser Grill

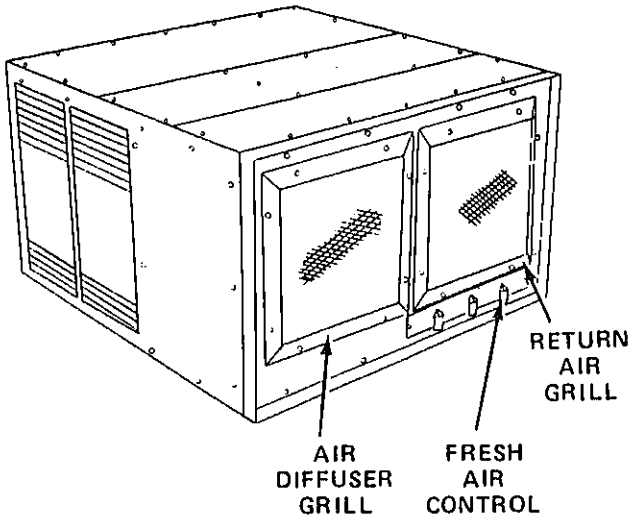
a. Brush off any loose dirt or foreign ma from air diffuser grill.
b. Wipe off air diffuser grill with a cl moistened with dry cleaning solvent, P-D- or P-S-661.
c. Inspect for and remove any obstructions.
d. Inspect air diffuser grill for security attachment and damage.
e. Report damaged condition to organizati maintenance personnel.

Return Air Grill

a. Brush off any loose dirt or foreign ma from return air grill.
b. Wipe off return air grill with a c moistened with dry cleaning solvent, P-D- or P-S-661.
c. Inspect for and remove any obstructions.
d. Inspect return air grill for security attachment and damage.
e. Report damaged condition to organizati maintenance personnel.

3. Return Air Grill

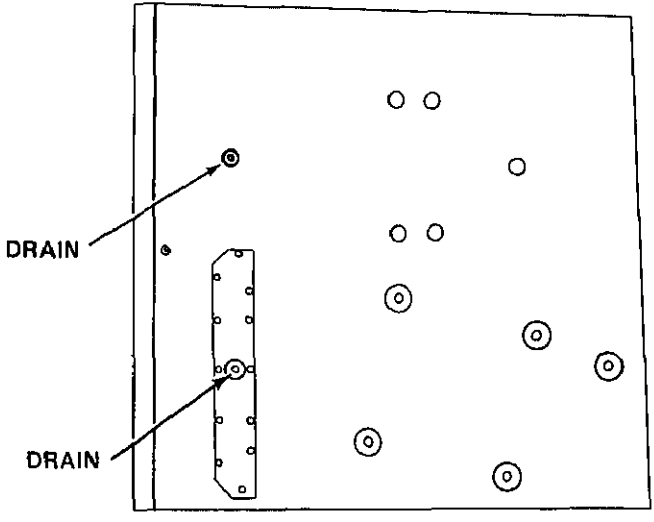
a. Adjust return air grill louvers by rotati
air control from CLOSED to FRESH
OPEN positions.
b. Verify return air grill louvers operate fr
c. Report damaged condition to organi
maintenance personnel.



References
None

Approximate Time Required (in minutes)
Inspection and Service 5
TOTAL TIME 5

LOCATION/ITEM	REMARKS	ACTION
INSPECTION AND SERVICE		
FRONT OR REAR		
Drains		*a.* Inspect drains for obstructions. *b.* Use a piece of soft wire to remove ob



AL SETUP

Material/Parts
None

References
None

Troubleshooting Reference
AIR CONDITIONER, Malfunction 1, St
AIR CONDITIONER, Malfunction 2, S
AIR CONDITIONER, Malfunction 2, St

Approximate Time Required (in minutes)

Inspection	5
TOTAL TIME	5

LOCATION/ITEM	REMARKS	ACTION
ECTION		
TROL PANEL		
ermostat Control		*a.* Insure knob is in place and control freely. *b.* Report damaged condition to organiz maintenance personnel.
ector Switch		*a.* Insure knob is in place and switch move from position to position and fu properly. *b.* Report damaged condition to organiz maintenance personnel.
sh Air Control		*a.* Insure knob is in place and check to see t control moves freely between positions. *b.* Report damaged condition to organiz maintenance personnel.

Section I. REPAIR PARTS. SPECIAL TOOLS, TMD AND SUPPORT EQUIPMENT

MAINTENANCE REPAIR PARTS

air parts for the air conditioner are listed and illustrated in TM 5-4120-341-23P.

COMMON TOOLS AND EQUIPMENT

common tools and equipment, refer to the Table of Organization and Equipment (TOE).

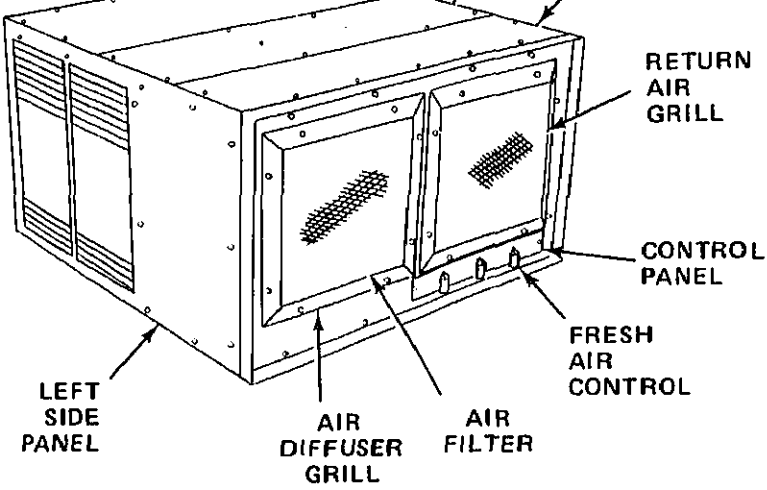
SPECIAL TOOLS AND TEST EQUIPMENT

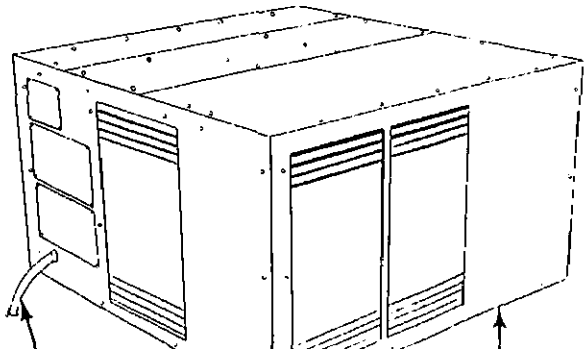
pecial tools or test equipment are required.

CONSUMABLE MATERIALS

Item No.	Name	Specific
1	Coater, Air Filter	MIL-L-2
2	Dry Cleaning Solvent	P-D-680
3	Dry Cleaning Solvent	P-S-661
4	Adhesive	MMM-A

		and Grills	*b.* Service or reject any component if damage prevents the air conditioner from working properly.	
2	Front	Air Filter	*a.* Remove top front panel.	Paragr
			b. Remove air filter and inspect the filter for accumulation of dirt.	
			c. Clean or reject filter.	
3	Front	Return Air Grill	*a.* Check to see that the FRESH AIR control moves freely between the OPEN and CLOSED position and that the return air grill opens and closes properly.	Paragr
			b. Adjust or reject FRESH AIR control.	
4	Front	Control Panel	*a.* Check for broken or damaged knobs. Insure that switches and controls move freely from position to position.	Paragr
			b. Reject any component that is found to be malfunctioning.	
5	Right Side	Power Cable	*a.* Inspect power cable electrical connector for damage.	Paragr
			b. Repair or reject power cable.	

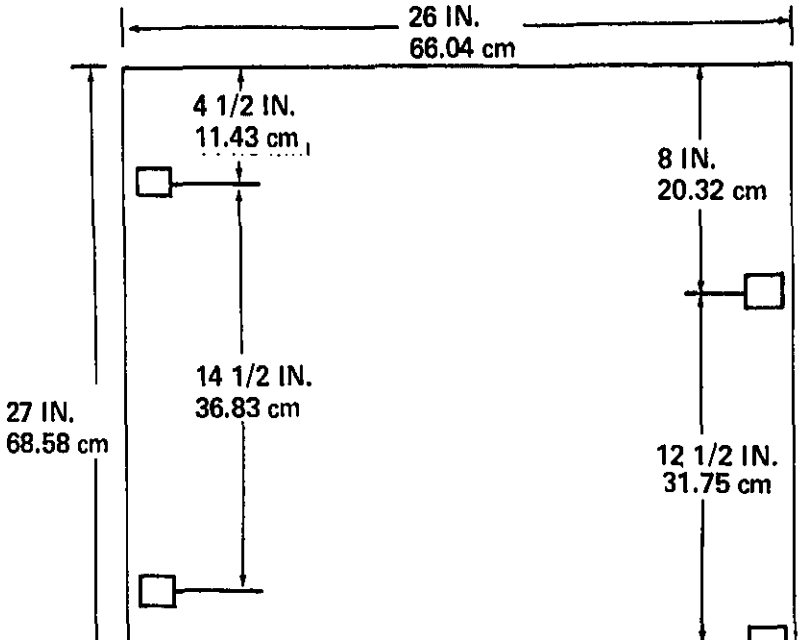

RETURN
AIR
GRILL
CONTROL
PANEL
FRESH
AIR
CONTROL
LEFT
SIDE
PANEL
AIR
DIFFUSER
GRILL
AIR
FILTER

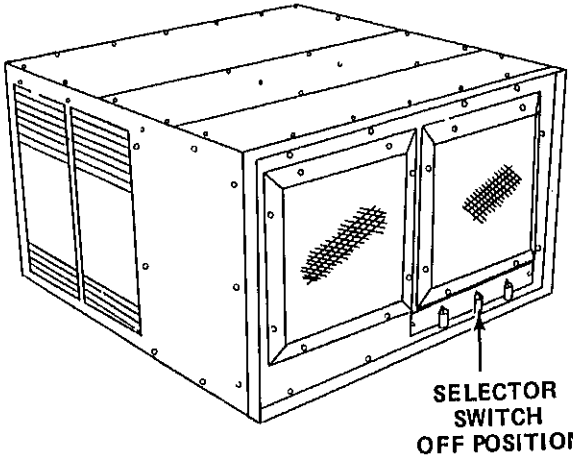


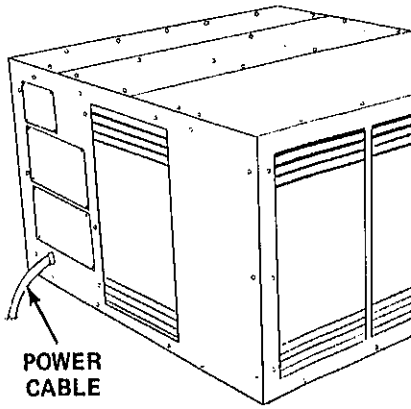
The total weight of the air conditioner is 153 pounds (69.40 kg.). Use a hand truck or fork li 200 pounds (90.8 kg.) capacity to unload the air conditioner. Keep the air conditioner up unloading. Pick a place that is as level as possible. Install the air conditioner in a van, shelter, through an opening 15 7/8 inches (40.3225 cm) high by 26 1/4 inches (66.675 cm) long. Ma the air conditioner is installed so there is no restriction on the air flow, so that return air wil greatest amount of warm air in the space to be cooled. Make sure that the control panel is acce operator and maintenance personnel.

4-8. MOUNT THE UNIT

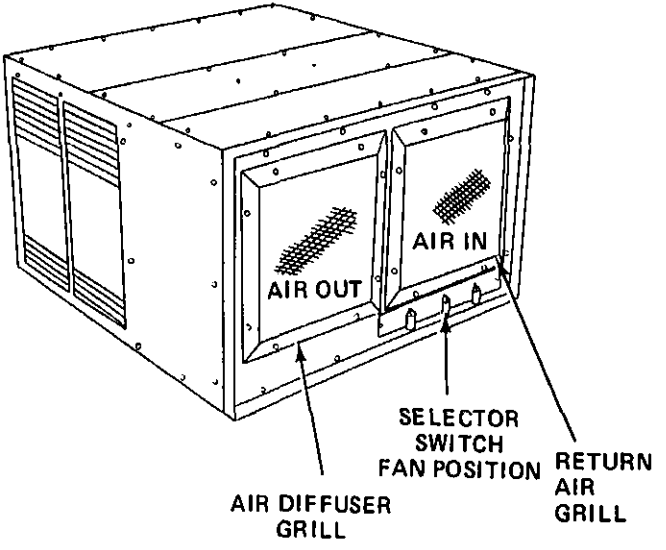
Brace the air conditioner with two (2) brackets to resist shock. Bolt the air conditioner to using the four (4) threaded holes in the bottom of the air conditioner.

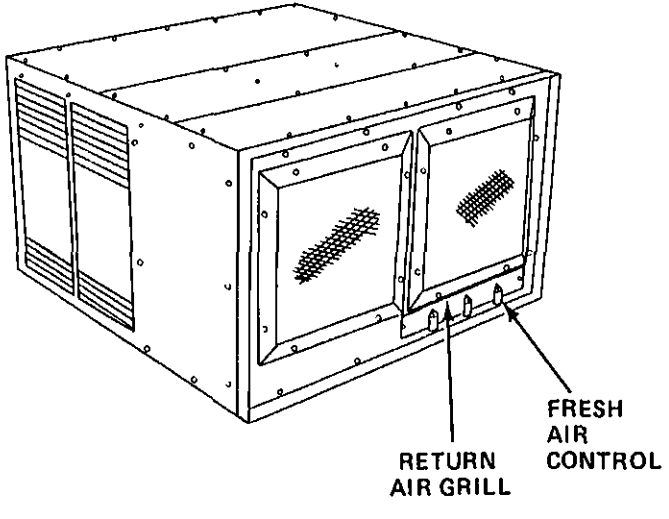



SELECTOR
SWITCH
OFF POSITION


POWER
CABLE

to see that air is sucked through the air return grill and air is blown out through the air discharge grill.




FRESH
AIR
CONTROL
RETURN
AIR GRILL

deficiencies and shortcomings shall be recorded together with the corrective action taken on D 2404 "Equipment Inspection and Maintenance Worksheet", at the earliest opportunity. If your eq fails to operate, troubleshoot with proper equipment. Report any deficiencies using proper forms 38-750.

4-14. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

WARNING

Dry cleaning solvent, P-D-680, or P-S-661, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100° F (38° C).

WARNING

Do not use compressed air for cleaning purposes except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

No.	W	Q	Inspected	Or Adjusted As Necessary	Available If
1	●		Air Filter	Remove twelve (12) screws securing air filter cover to bottom of air conditioner. Remove air filter cover and gasket. Slide air filter down and out of air conditioner.	

WARNING

Dry cleaning solvent, P-D-680 or P-S-661, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100° F (38° C).

Clean air filter with P-D-680 or P-S-661 dry cleaning solvent or warm soapy water and dry with low-pressure compressed air.

Inspect air filter for damaged or clogged condition. Replace air filter if damage is indicated.

Inspect two (2) rubber pads on bottom of air filter for damage. Replace pads if damage is indicated. Secure pads with adhesive per specification MMM-A-121.

Dip or spray air filter with filter-kote or oil per specification MIL-L-2104 Grade 20, 30 or better. Drain off excessive oil before installation.

Slide air filter up into air conditioner.

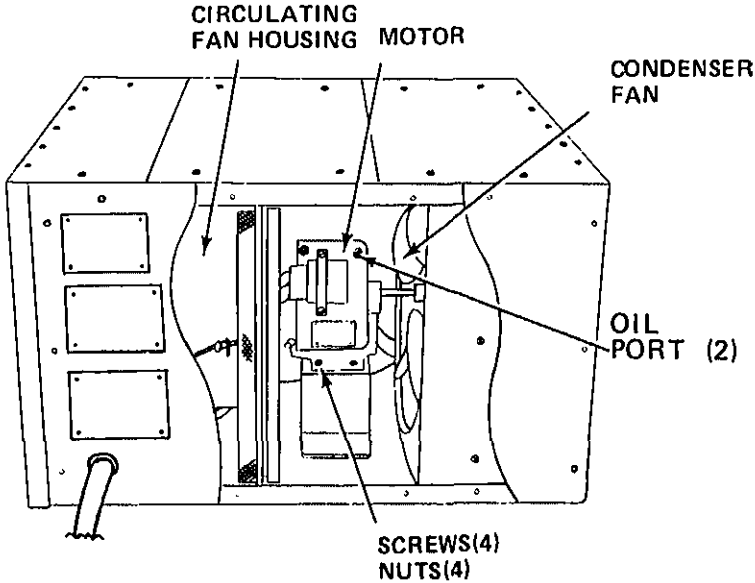
Install gasket and air filter cover and secure with twelve (12) screws.

NOTE

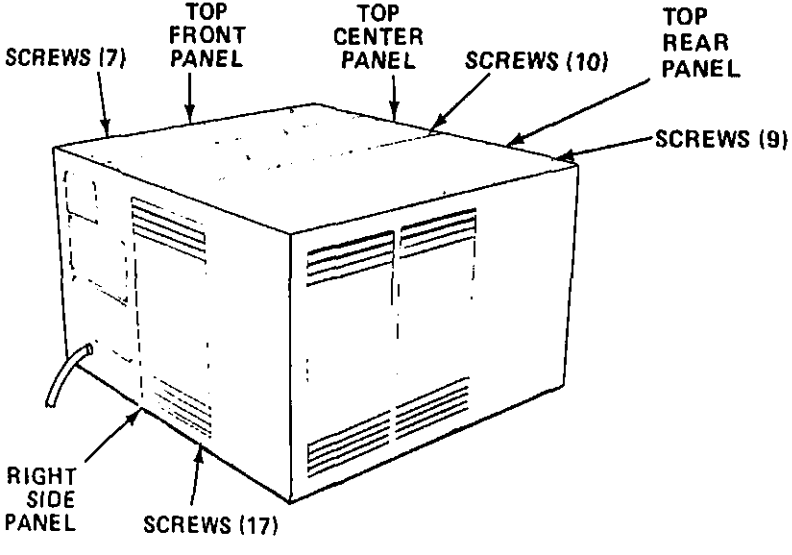
For the following PMCS items, the air

		housing. Remove right side panel.
		Inspect fan motor for security of attachment.
		Remove two (2) oil port caps and add SAE-20 oil every year. Replace oil port caps.
		Align holes in right side panel with holes in housing.
		Secure right side panel with seventeen (17) screws.
•	Fans	Remove seventeen (17) screws securing right side panel to housing. Remove right side panel.
		Inspect condenser fan for cleanliness and damage.
		Inspect circulating fan for cleanliness and damage.

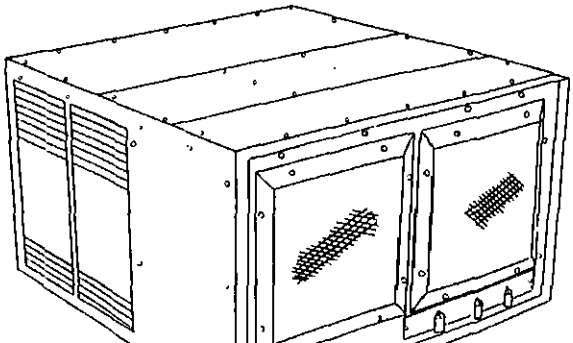
Secure right side panel with seventeen (17) screws.



No.	W	Q	Inspected	Or Adjusted As Necessary	Available If:
4		●	Wiring	Remove ten (10) screws securing top center panel to housing. Remove top center panel. Remove seven (7) screws securing top front panel to housing. Remove top front panel. Remove nine (9) screws securing top rear panel to air conditioner housing. Remove top rear panel. Remove seventeen (17) screws securing right side panel to housing. Remove right side panel.	



No.	W	Q	Inspected	Or Adjusted As Necessary	Available If:
4		●	Wiring (continued)	Remove seventeen (17) screws securing left side panel to housing. Remove left side panel. Inspect wiring insulation for cracks and frayed material. Pay particular attention to the wires passing through holes in the frame or over rough edges. Repair or replace damaged wiring. Align holes in left side panel with holes in housing. Secure left side panel with seventeen (17) screws. Align holes in right side panel with holes in housing. Secure right side panel with seventeen (17) screws.	

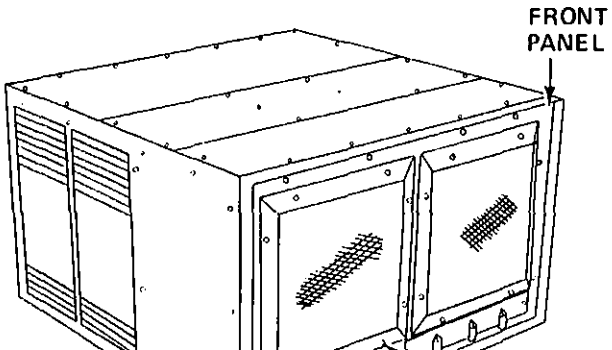


top rear panel with nine (9) screws.

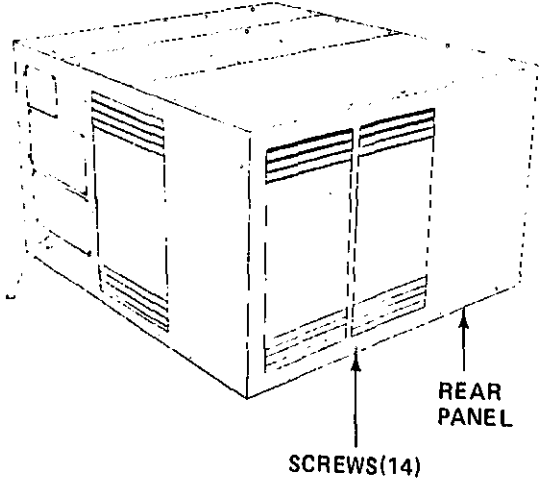
Align holes in top front panel with holes in housing. Secure top front panel with seven (7) screws.

Align holes in top center panel with holes in top front and top rear panels. Secure top center panel with ten (10) screws.

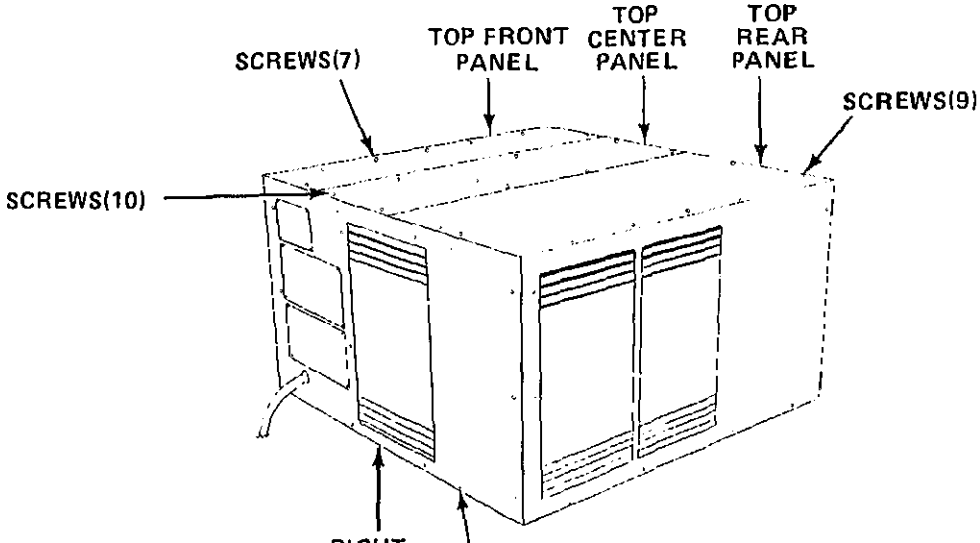
W	Q	Inspected	Or Adjusted As Necessary	Available If:
	●	Evaporator Coil	Remove eight (8) screws securing air diffuser grill to front panel. Remove air diffuser grill. Remove screws (17) securing left side panel to housing. Remove left side panel. Inspect evaporator coil for cleanliness. Use a stiff bristle brush to remove scale and corrosion from the external portion of the evaporator coil. Inspect evaporator coil for leaks. Report damaged condition to direct support maintenance personnel. Align holes in left side panel with holes in housing. Secure left side panel with seventeen (17) screws. Align holes in air diffuser grill with holes in front panel. Secure air diffuser grill with eight (8) screws.	



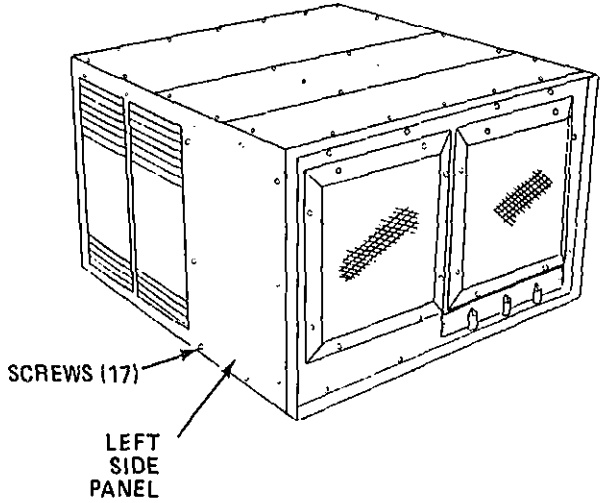
6	●	Condenser Coil	Remove fourteen (14) screws securing rear panel to housing. Remove rear panel. Inspect condenser coil for cleanliness. Use a stiff bristle brush to remove scale and corrosion from the external portion of the condenser coil. Inspect condenser coil for leaks. Report damaged condition to direct support maintenance personnel. Align holes in rear panel with holes in housing. Secure rear panel with fourteen (14) screws.



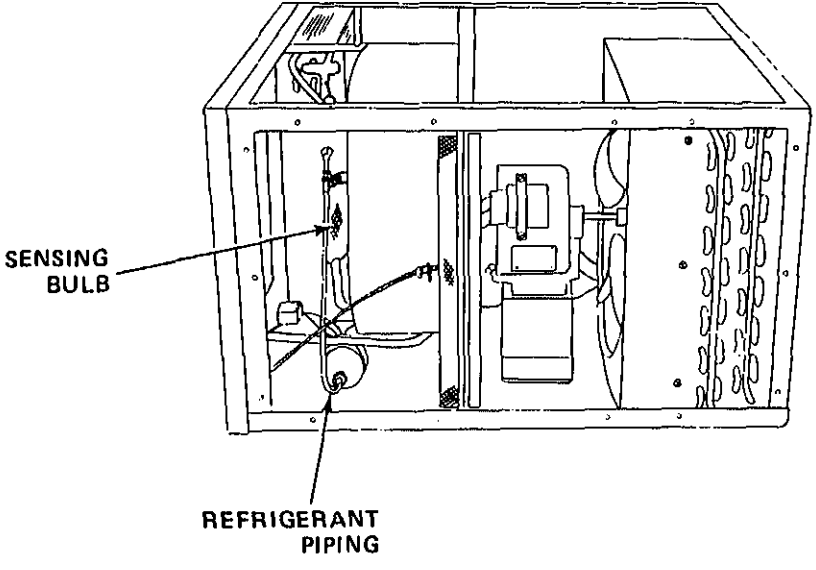
●	Expansion Valve and Refrigerant Piping	Remove ten (10) screws securing top center panel to housing. Remove top center panel. Remove seven (7) screws securing top front panel to housing. Remove top front panel. Remove nine (9) screws securing top rear panel to air conditioner housing. Remove top rear panel. Remove seventeen (17) screws securing right side panel to housing. Remove right side panel.



Item No.	Interval W	Interval Q	Item To Be Inspected	Check For and Have Repaired Or Adjusted As Necessary	Equipment Is Not Available If:
7		●	Expansion Valve and Refrigerant Piping (continued)	Remove seventeen (17) screws securing left side panel to housing. Remove left side panel.	



7	●	Expansion Valve and Refrigerant Piping (continued)	Inspect refrigerant piping for leaks. Repair leaks. Inspect expansion valve for loose or leaking connections. Tighten connections. Check to see that the sensing bulb is securely fastened and is completely covered with insulation tape part number 165 manufactured by Pressite Division, Inmont, Inc., St. Louis, MO.	



and Refrigerant Piping (continued)

with holes in housing. Secure left side panel with seventeen (17) screws.

Align holes in right side panel with holes in housing. Secure right side panel with seventeen (17) screws.

Align holes in top rear panel with holes in housing. Secure top rear panel with nine (9) screws.

Align holes in top front panel with holes in housing. Secure top front panel with seven (7) screws.

Align holes in top center panel with holes in top front and top rear panels. Secure top center panel with ten (10) screws.

NOTE

The sight glass may be inspected by looking through the louvers in the left side panel. If you cannot see the sight glass through the left side panel, then remove the rear panel.

remove rear panel.

With the air conditioner operating and providing cooling air, inspect sight glass.

Yellow appearance indicates moisture in system and bubbles or milky flow indicate low refrigerant charge.

Report presence of these conditions to direct support maintenance personnel.

Align holes in rear panel with holes in housing. Secure rear panel with fourteen (14) screws.

remedy the malfunction. You should perform the tests/inspections and corrective actions in t
ed.

. This manual cannot list all malfunctions that may occur; nor all tests or inspections and c
ons. If a malfunction is not listed or is not corrected by listed corrective actions, notify your su

. ORGANIZATIONAL TROUBLESHOOTING TABLE

Malfunction	Test or Inspection	Corrective Action

AIR CONDITIONER

AIR CONDITIONER FAILS TO OPERATE

Step 1. Check to see if main power cord is plugged in.
Connect power cable to receptacle supplying 115 VAC, single phase, 60 Hz power.

Step 2. Check to see if power receptacle connector is defective.
Replace defective power receptacle connector (para. 4-29).

Step 3. Check for loose electrical connections.
Tighten electrical connections.

Step 4. Inspect for defective wiring.
**Replace defective wiring. Use identical type wire, consult Appendix F, and s
terminal connections (para. 4-29).**

Step 5. Check the selector switch.

a. Observe position of the switch. Be sure switch is NOT in the OFF positio

b. Rotate the switch through all operating positions. If the air conditi
operate in some but not all operating positions, check for a defective swi
a multimeter.

Replace defective switch (para.4-23).

INSUFFICIENT COOLING

Step 1. Inspect sight glass for proper amount of refrigerant (para. 4-34).
Report condition to direct support maintenance personnel.

Step 2. Check for dirty air filter.
Clean or replace air filter (para. 4-19).

Step 3. Inspect evaporator coil for cleanliness.
Clean evaporator coil (para. 4-32).

Step 4. Check compressor for proper operation (para. 4-30).
Report condition to direct support maintenance personnel.

Step 5. Inspect for closed, bent or stuck louvers in the return air grill.
Open louvers, straighten bent louvers or replace damaged return air grill (para. 4-18)

Step 6. Check to see that circulating fan is securely mounted on motor shaft and that th
indication of damage to circulating fan.

Tighten setscrews in hub of condenser fan and any other loose mounting hardware or replace damaged condenser fan (para. 4-21).

3. Inspect fan motor for wear and damage.
   Replace damaged fan motor (para. 4-20).
4. Check to see if compressor is knocking or chattering.
   Stop air conditioner and report condition to direct support maintenance personnel.

FANS

LATING FAN FAILS TO OPERATE

1. Check to see if main power cord is plugged in.
   Connect power cord to receptacle supplying 115 VAC, single phase, 60 Hz power.
2. Test fan motor for resistance.
   Consult Appendix F and replace fan motor if damage is indicated (para. 4-20).
3. Check circulating fan for damage or binding.
   Relieve binding or replace damaged circulating fan (para. 4-22).
4. Test fan motor capacitor for continuity, leakage and capacitance.
   Replace capacitor if damage is indicated (para. 4-25).

ENSER FAN FAILS TO OPERATE

1. Check to see if main power cord is plugged in.
   Connect power cord to receptacle supplying 115 VAC, single phase, 60 Hz power.
2. Test fan motor for resistance.
   Consult Appendix F and replace fan motor if damage is indicated (para. 4-20).
3. Check condenser fan for damage or binding.
   Relieve binding or replace damaged circulating fan (para. 4-21).
4. Test fan motor capacitor for continuity, leakage and capacitance.
   Replace capacitor if damage is indicated (para. 4-25).

COMPRESSOR

RESSOR WILL NOT START

1. Check the selector switch.
   a. Observe position of the switch. Be sure switch is NOT in the OFF or FAN positions.
   b. Place the switch in the COOL position. If the air conditioner will not operate in the COOL position, check for a defective switch using a multimeter.

   Replace defective switch (para. 4-23).
2. Check the THERMOSTAT.
   a. Observe position of the THERMOSTAT. Be sure THERMOSTAT is in the COOLER position.
   b. Rotate THERMOSTAT to the COOLER position. If the compressor will not start check for a defective THERMOSTAT using a multimeter.

Step 2. Test fan motor for resistance.
Consult Appendix F and replace fan motor if damage is indicated (para. 4-20).
Step 3. Check expansion valve for proper operation and damage (para. 4-33).
Report condition to direct support maintenance personnel.
Step 4. Check compressor for proper operation and damage (para. 4-30).
Report condition to direct support maintenance personnel.

AIR OUTPUT

1. EVAPORATOR AIR OUTPUT VOLUME LOW

Step 1. Inspect return air and air diffuser grills for damage and cleanliness.
Clean, repair or replace return air and air diffuser grills (para. 4-18).
Step 2. Inspect evaporator coil for damage, ice and cleanliness.
Clean evaporator coil (para. 4-32). Report damaged condition to direct support ma
personnel.
Step 3. Inspect circulating fan for security of attachment and damage.
Tighten setscrews in hub of circulating fan, replace fan if damage is indicated (p
Step 4. Test fan motor for resistance.
Consult Appendix F and replace fan motor if damage is indicated (para. 4-20).

2. CONDENSER AIR OUTPUT VOLUME LOW

Step 1. Inspect condenser coil for cleanliness or damage.
Clean condenser coil (para. 4-33). Report damaged condition to direct support ma
personnel.
Step 2. Test thermostat for resistance.
Replace defective thermostat (para. 4-24).
Step 3. Inspect condenser fan for security of attachment and damage.
Tighten setscrews in hub of condenser fan, replace fan if damage is indicated (para
Step 4. Test fan motor for resistance.
Consult Appendix F and replace fan motor if damage is indicated (para. 4-20).

ormation pertains to all procedures for organizational maintenance personnel.

Configurations

nent

ls

equired
zational Maintenance

Special Environmental Conditions
None

General Safety Instructions
Disconnect the power source before performing any maintenance function. Do not use compressed air for cleaning purposes except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

b. Repair

INITIAL SETUP

Material/Parts
- Top Center Panel Screws (10)
- Top Front Panel Screws (7)
- Top Rear Panel Screws (9)
- Right Side Panel Screws (17)
- Rear Panel Screws (14)
- Return Air Grill Screws (8)
- Air Diffuser Grill Screws (8)
- Control Panel Plate Screws (2)
- Front Panel Screws (14)
- Adhesive

References
- None

Troubleshooting Reference
- None

Approximate Time Required (in minute

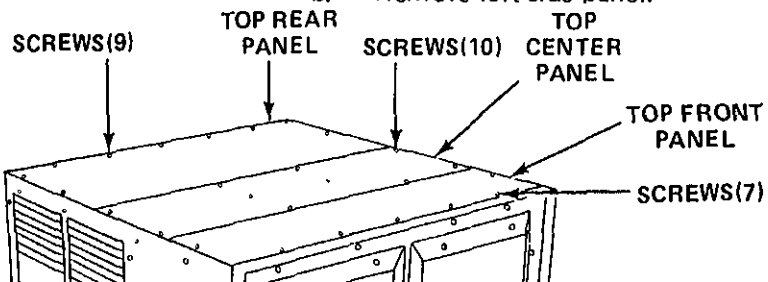
Removal	30
Repair	30
Installation	30
TOTAL TIME	90

LOCATION/ITEM	REMARKS	ACTION

REMOVAL

TOP AND LEFT SIDE OF HOUSING

1. Top Center Panel
   - *a.* Remove ten (10) screws securing panel.
   - *b.* Remove top center panel.
2. Top Front Panel
   - *a.* Remove seven (7) screws securin panel.
   - *b.* Remove top front panel.
3. Top Rear Panel
   - *a.* Remove nine (9) screws securir panel.
   - *b.* Remove top rear panel.
4. Left Side Panel
   - *a.* Remove seventeen (17) screws s side panel.
   - *b.* Remove left side panel.



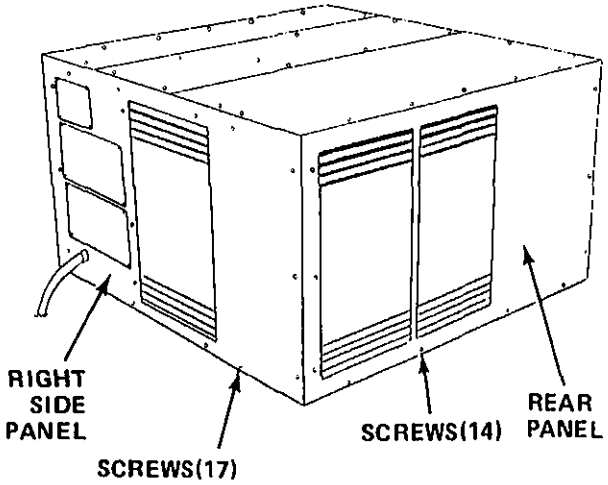
SIDE AND REAR OF HOUSING

t Side Panel

a. Remove seventeen (17) screws securing righ side panel.
b. Remove right side panel.

Panel

a. Remove fourteen (14) screws securing rea panel.
b. Remove rear panel.



AL

OF HOUSING

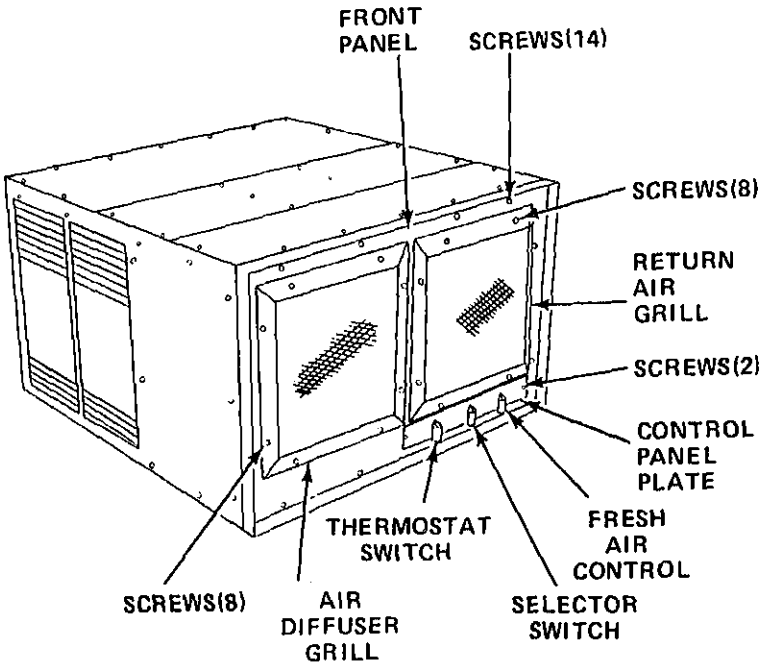
rn Air Grill

a. Loosen mechanical screw post at rear c

c. Remove control panel plate.

10. Front Panel

a. Remove two (2) screws securing switch to front panel.
b. Remove fourteen (14) screws se panel.
c. Remove front panel.

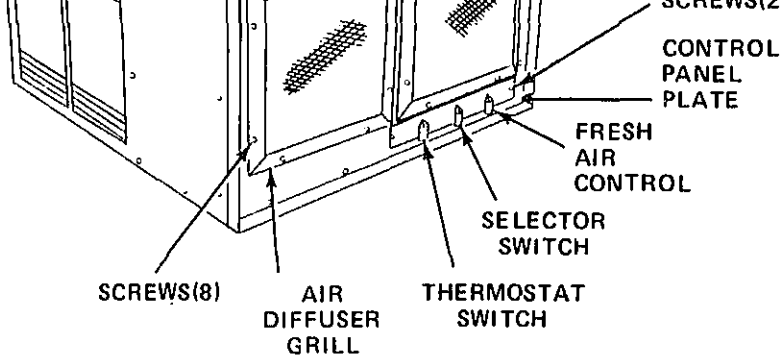


Front and Rear Panels	*a.* Inspect self-locking plate nuts for damage. *b.* Drill out blind rivets, then rivet new nut to top front panel. *c.* Inspect panels for distortion or loose gasket *d.* Secure loose gasket with adhesive per specification MMM-A-121. *e.* Replace gasket with .062 inch thick wool felt per specification MIL-G-20241. Secure gasket with adhesive per specification MMM-A-121.
enter Panel	*a.* Inspect panel for distortion. *b.* Straighten or replace damaged panel. Repair consists of straightening bent louvers.

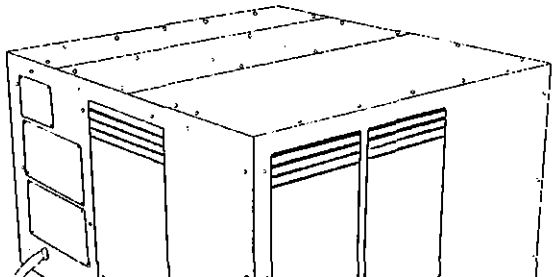
ATION

F HOUSING

Panel	*a.* Align holes in thermostat switch with holes in front panel. *b.* Secure thermostat switch to front panel with two (2) screws. *c.* Align holes in front panel with holes in housing. *d.* Secure front panel with fourteen (14) screws.
ol Panel Plate	*a.* Align holes in control panel plate with holes in front panel. *b.* Secure control panel plate with two (2 screws. *c.* Install three (3) knobs.
ffuser Grill	*a.* Align holes in air diffuser grill with holes in front panel. *b.* Secure air diffuser grill with eight (8) screws.
n Air Grill	*a.* Align holes in return air grill with holes in front panel. *b.* Secure return air grill with eight (8) screws. *c.* Install wire in mechanical screw post and tighten mechanical screw post.



LOCATION/ITEM	REMARKS	ACTION
STALLATION		
GHT SIDE AND REAR OF HOUSING		
Rear Panel		*a.* Align holes in rear panel with holes housing. *b.* Secure rear panel with fourteen (14) scre
Right Side Panel		*a.* Align holes in right side panel with holes housing. *b.* Secure right side panel with seventeen (screws.



e Panel

a. Align holes in left side panel with holes in housing.
b. Secure left side panel with seventeen (17) screws.

ır Panel

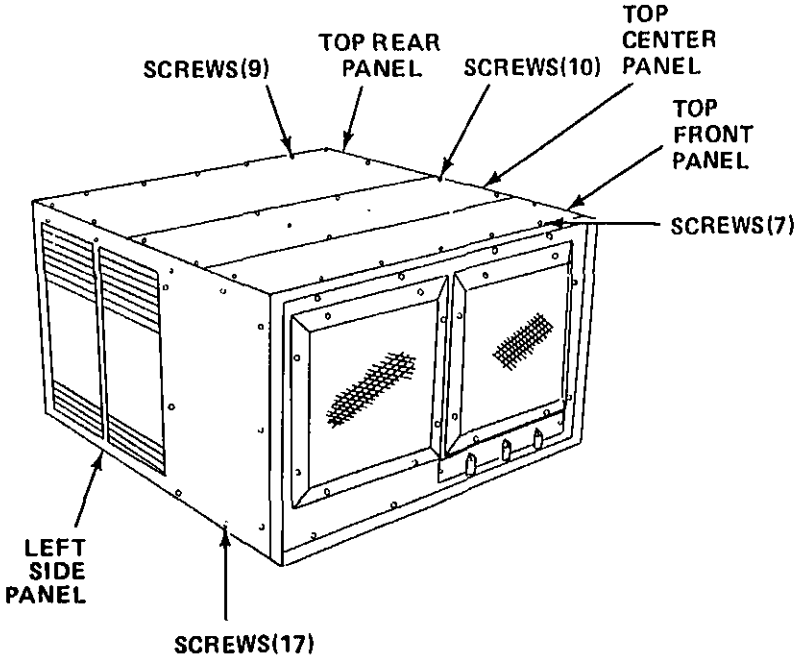
a. Align holes in top rear panel with holes in housing.
b. Secure top rear panel with nine (9) screws.

nt Panel

a. Align holes in top front panel with holes in housing.
b. Secure top front panel with seven (7) screws.

ıter Panel

a. Align holes in top center panel with holes in top front and top rear panels.
b. Secure top center panel with ten (10) screws.



b. Inspection

d. Installation

INITIAL SETUP

Material/Parts
Air Filter Cover Screws (12)
Dry Cleaning Solvent
Filterkote or Oil

References
None

Troubleshooting Reference
AIR CONDITIONER, Malfunction 2

Approximate Time Required (in minutes)

Removal	10
Inspection and Service	10
Installation	10
TOTAL TIME	30

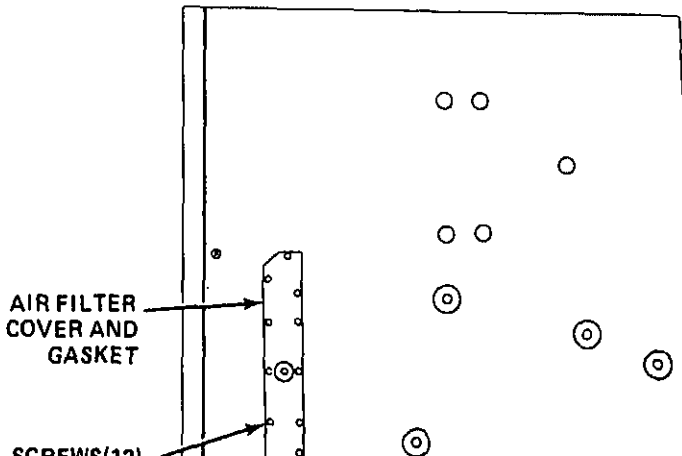
LOCATION/ITEM	REMARKS	ACTION

REMOVAL

BOTTOM OF HOUSING

1. *Air Filter*

a. Remove twelve (12) screws securing cover to bottom of air conditioner.
b. Remove air filter cover and gasket.
c. Slide air filter down and out conditioner.



Dry cleaning solvent, P-D-680 or P-S-661, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100°F (38°C).

WARNING

Do not use compressed air for cleaning purposes except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

er

a. Clean air with P-D-680 or P-S-661 dry cleaning solvent or warm soapy water.
b. Dry air filter with low pressure compressed air.
c. Inspect air filter for damaged or clogged condition.
d. Replace air filter if damage is indicated.
e. Inspect two (2) rubber pads on bottom of air filter for damaged condition.
f. Replace pads with a 2-inch long piece of rubber in accordance with ASTM D2000-2BG505F17L14.
g. Secure pads with adhesive per specification MMM-A-121.
h. Dip or spray air filter with filterkote or oil per specification MIL-L-2104 Grade 20, 30 or better.
i. Drain off excess oil before installation.

ATION

OF HOUSING

er

a. Slide air filter up into air conditioner.
b. Install gasket and air filter cover.
c. Secure air filter cover with twelve (12) screws.

Return Air Grill Screws (8)
Air Diffuser Grill Screws (8)
Control Panel Plate Screws (2)
Front Panel Screws (14)
Blower Intake Ring Screws (7)
Fan Motor Capscrews (4)
Fan Motor Self-Locking Nuts (4)
Thermostat Switch Screws (2)

References
None

AIR OUTPUT, Malfunction 1,
AIR OUTPUT, Malfunction 2,
NOISE, Malfunction 1, Step 3

Approximate Time Required (in min
Removal
Inspection and Testing
Repair
Installation
TOTAL TIME

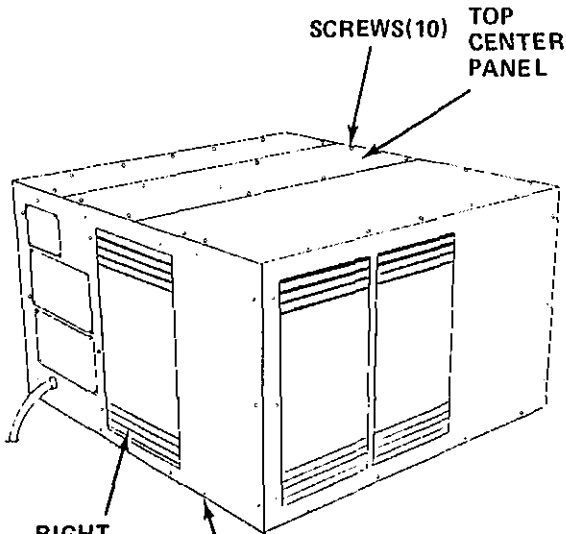
LOCATION/ITEM	REMARKS	ACTION

REMOVAL

RIGHT SIDE AND TOP OF HOUSING

1. Right Side Panel
   a. Remove seventeen (17) screws
   side panel.
   b. Remove right side panel.

2. Top Center Panel
   a. Remove ten (10) screws secu
   panel.
   b. Remove top center panel.



Grill

a. Loosen mechanical screw post at rear of return air grill and remove wire.
b. Remove eight (8) screws securing return air grill.
c. Remove return air grill.

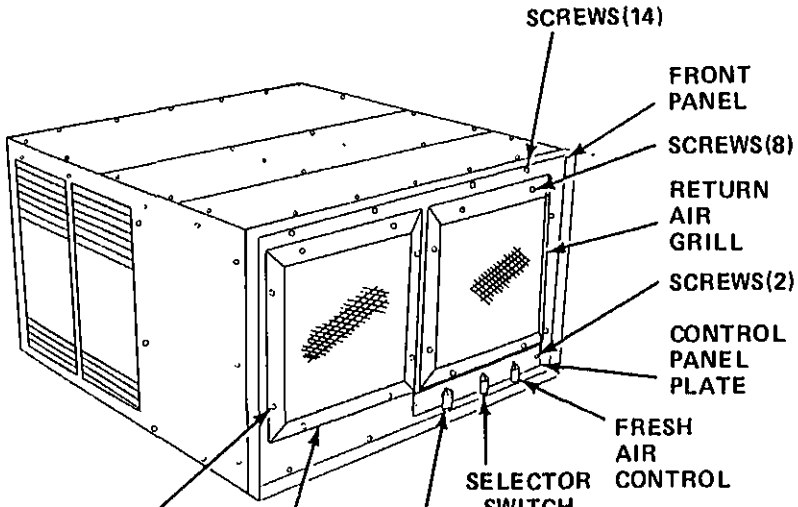
Grill

a. Remove eight (8) screws securing air diffuser grill.
b. Remove air diffuser grill.

nel Plate

a. Loosen setscrews and remove knobs from fresh air control, selector switch and thermostat switch.
b. Remove two (2) screws securing control panel plate.
c. Remove control panel plate.

a. Remove two (2) screws securing thermostat switch to front panel.
b. Remove fourteen (14) screws securing front panel.
c. Remove front panel.



LOCATION/ITEM	REMARKS	ACTION

REMOVAL

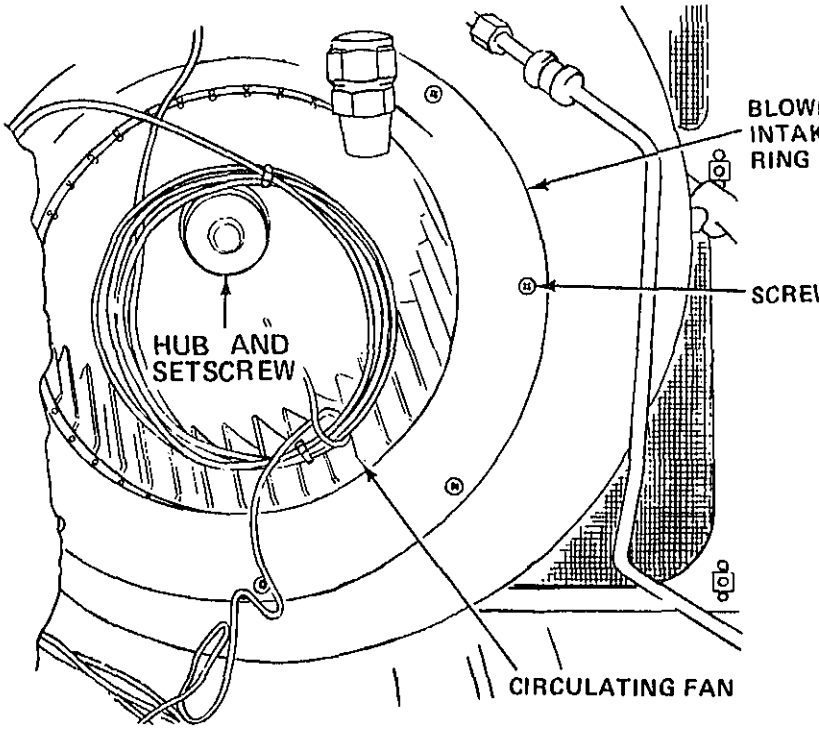
FRONT OF HOUSING

7. Blower Intake Ring

a. Remove seven (7) screws sec
intake ring.
b. Remove blower intake ring.

8. Circulating Fan

a. Loosen setscrew in hub of circul
b. Carefully remove circulating fan

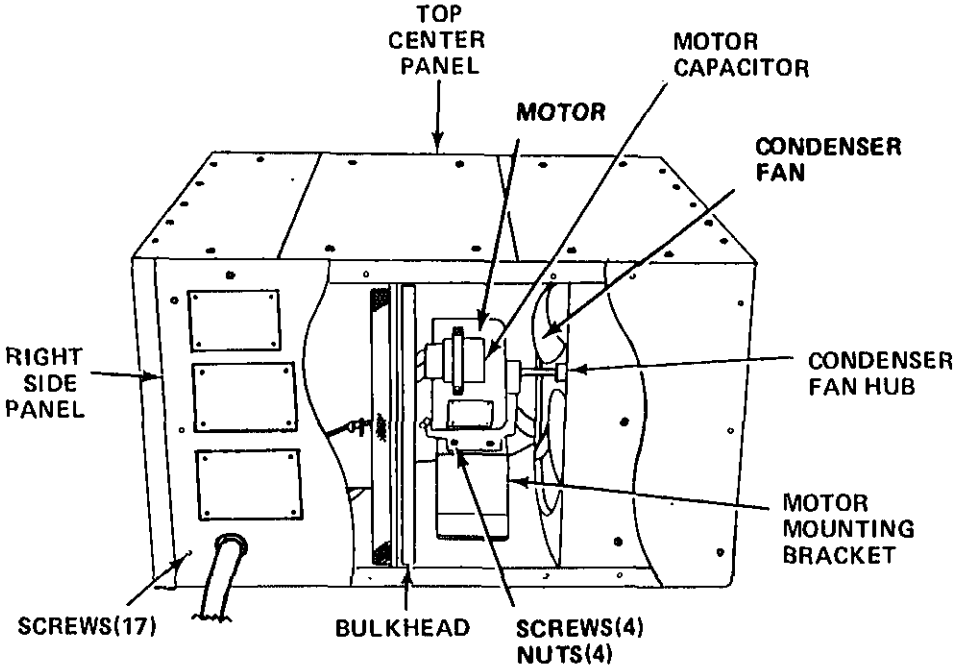


WARNING

Death or serious injury may occur if capacitor is not discharged prior to removal.

r

a. Remove upper four (4) capscrews and self-locking nuts securing motor to motor mounting bracket.
b. Slide motor back against bulkhead.
c. Loosen setscrew in hub of condenser fan.
d. Remove condenser fan.
e. Discharge motor capacitor.
f. Tag and disconnect electrical leads to motor capacitor.
g. Tag and disconnect leads to fan motor.
h. Remove fan motor from housing.

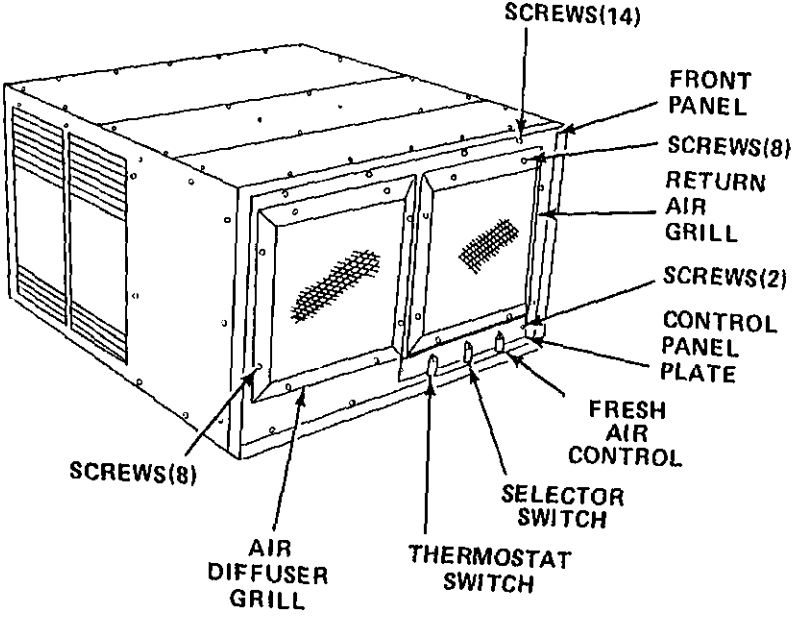


	d. Replace motor if there is NO re
REPAIR	
11. Fan Motor	Repair electrical wiring as follows: *(1)* Remove insulation to exp bare wire on each side of *(2)* Twist the wire ends toge the splice. *(3)* Cover the splice with tape, making certain to co areas.
INSTALLATION	
12. Fan Motor	*a.* Connect electrical leads to n and remove tags. *b.* Connect electrical leads to remove tags. *c.* Place fan motor on motor mo *d.* Slide fan motor back against b
INSTALLATION	
RIGHT SIDE OF HOUSING	
13. Condenser Fan	*a.* Install condenser fan on fan m *b.* Tighten setscrew in condenser
FRONT OF HOUSING	
14. Circulating Fan	*a.* Carefully install circulating fa shaft. *b.* Tighten setscrew in circulating
15. Blower Intake Ring	*a.* Align holes in blower intake ri circulating fan housing. *b.* Secure blower intake ring screws.
16. Front Panel	*a.* Align holes in thermostat swit front panel. *b.* Secure thermostat switch to two (2) screws. *c.* Align holes in front panel housing.

a. Align holes in control panel plate with holes in front panel.
b. Secure control panel plate with two (2) screws.
c. Install three (3) knobs on fresh air control, selector switch, and thermostat switch.

a. Align holes in air diffuser grill with holes in front panel.
b. Secure air diffuser grill with eight (8) screws.

a. Align holes in return air grill with holes in front panel.
b. Secure return air grill with eight (8) screws.
c. Install wire in mechanical screw post and tighten mechanical screw post.



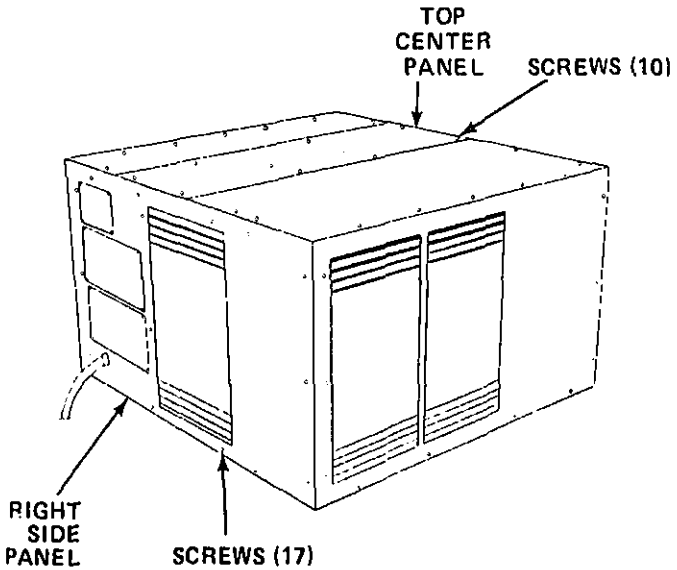
RIGHT SIDE AND TOP OF HOUSING

20. Top Center Panel

a Align holes in top center panel w
top rear and top front panels.
b. Secure top center panel with ten

21. Right Side Panel

a Align holes in right side panel w
housing.
b. Secure right side panel with sev
screws.



d. Installation

UP
Parts
t Side Panel Screws (17)
Center Panel Screws (10)
rn Air Grill Screws (8)
Diffuser Grill Screws (8)
trol Panel Plate Screws (2)
t Panel Screws (14)
ver Intake Ring Screws (7)
Motor Capscrews (4)
Motor Self-Locking Nuts (4)
rmostat Switch Screws (2)
es
e

Troubleshooting Reference
FANS, Malfunction 1, Step 3
AIR OUTPUT, Malfunction 2, Step 3
NOISE, Malfunction 1, Step 2

Approximate Time Required (in minutes)

Removal	30
Inspection and Repair	20
Installation	30
TOTAL TIME	80

ON/ITEM	REMARKS	ACTION

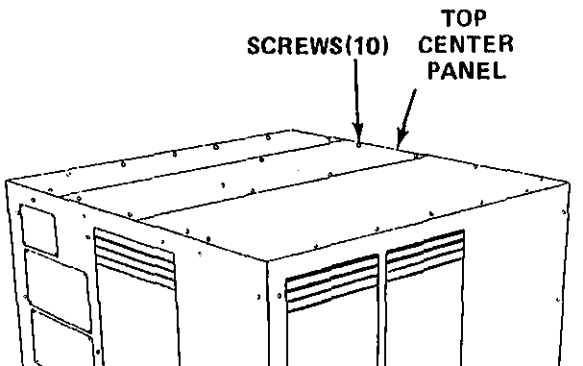
AND TOP OF HOUSING

Panel

a. Remove seventeen (17) screws securing right side panel.
b. Remove right side panel.

Panel

a. Remove ten (10) screws securing top center panel.
b. Remove top center panel.



3. Return Air Grill

a. Loosen mechanical screw post return air grill and remove wire.
b. Remove eight (8) screws securi grill.
c. Remove return air grill.

4. Air Diffuser Grill

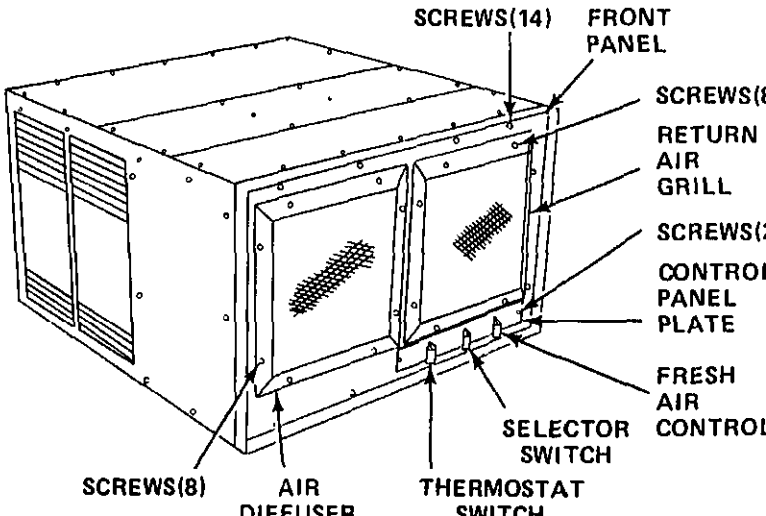
a. Remove eight (8) screws securin grill.
b. Remove air diffuser grill.

5. Control Panel Plate

a. Loosen setscrews and remove fresh air control, selector thermostat switch.
b. Remove two (2) screws securing plate.
c. Remove control panel plate.

6. Front Panel

a. Remove two (2) screws securin switch to front panel.
b. Remove fourteen (14) screws s panel.
c. Remove front panel.

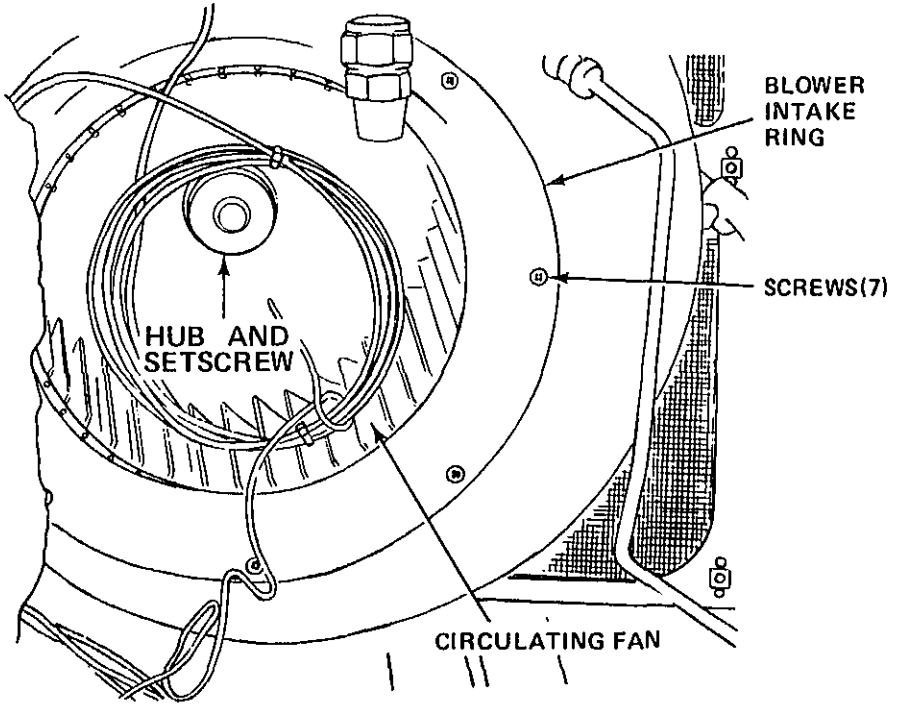


ke Ring

a. Remove seven (7) screws securing blower intake ring.
b. Remove blower intake ring.

Fan

a. Loosen setscrew in hub of circulating fan.
b. Carefully remove circulating fan.

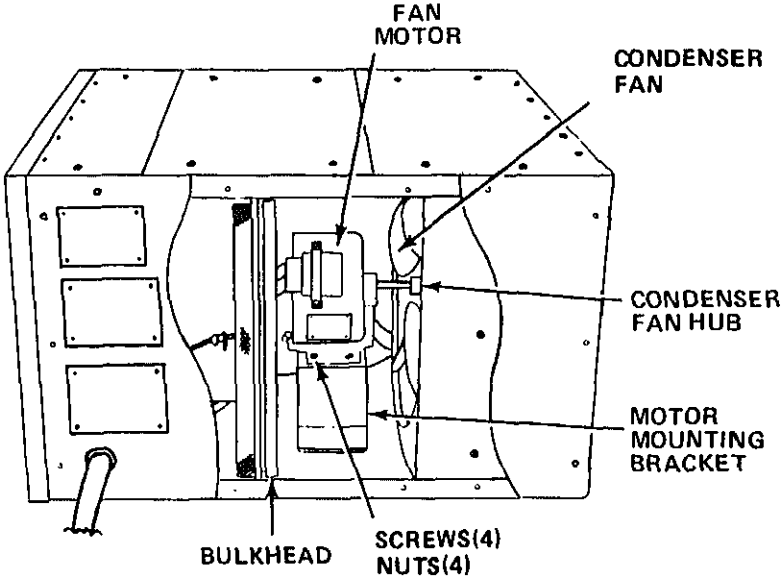


b. Replace condenser fan if damage to h
condenser fan is indicated.
c. Replace setscrew with a 1/4-28UNF-
.312 inch long setscrew if damage is indi

INSTALLATION

11. Condenser Fan

a. Install condenser fan on fan motor shaft
b. Tighten setscrew in condenser fan hub.
c. Slide fan motor back into place on
mounting bracket.
d. Secure fan motor to motor mounting b
with four (4) capscrews and self-locking

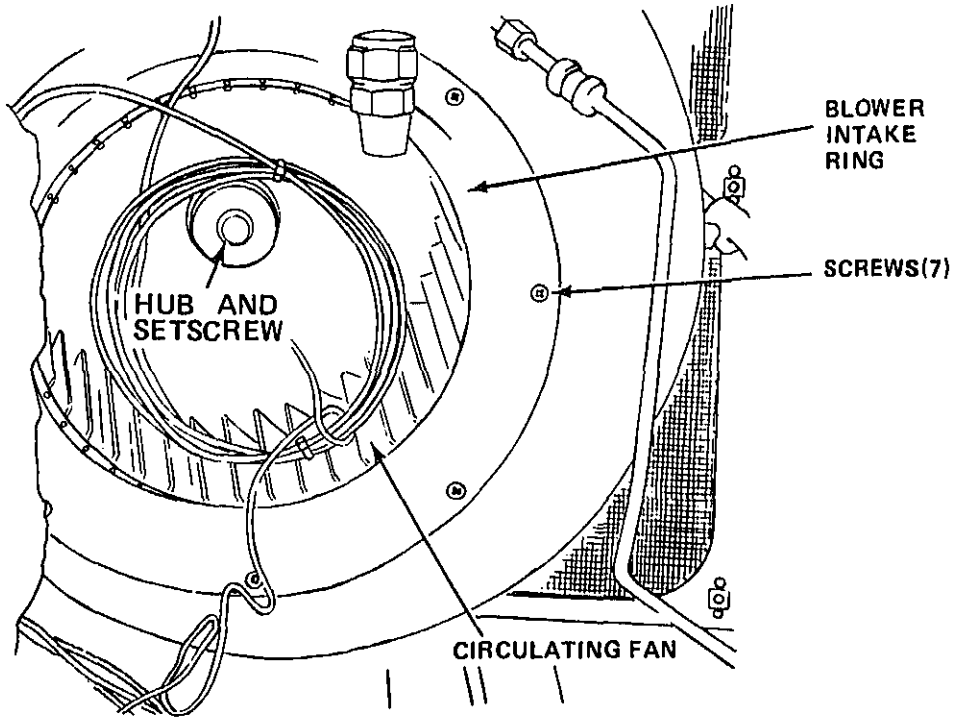


culating Fan

a. Carefully install circulating fan on fan shaft.
b. Tighten setscrew in circulating fan hub.

ower Intake Ring

a. Align holes in blower intake ring with h circulating fan housing.
b. Secure blower intake ring with seve screws.



14. Front Panel

a. Align holes in thermostat switch with ho
front panel.
b. Secure thermostat switch to front pane
two (2) screws.
c. Align holes in front panel with ho
housing.
d. Secure front panel with fourteen (14) s

15. Control Panel Plate

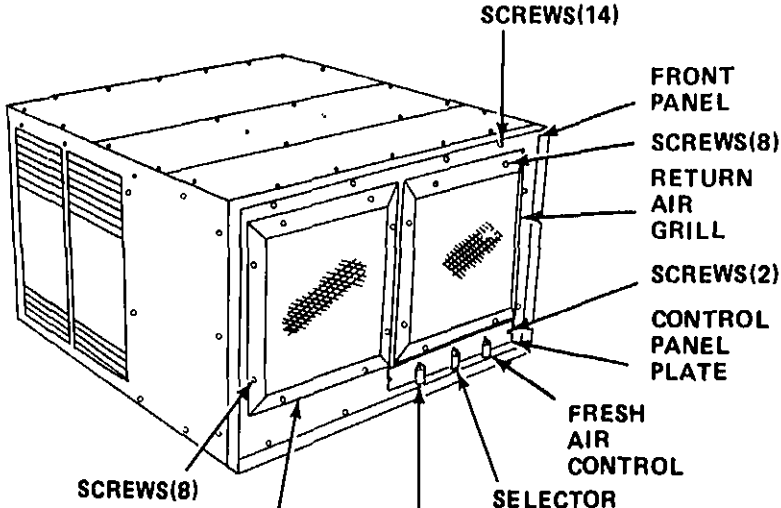
a. Align holes in control panel plate with
in front panel.
b. Secure control panel plate with tw
screws.
c. Install three (3) knobs on fresh air co
selector switch and thermostat switch.

16. Air Diffuser Grill

a. Align holes in air diffuser grill with ho
front panel.
b. Secure air diffuser grill with eight (8) s

17. Return Air Grill

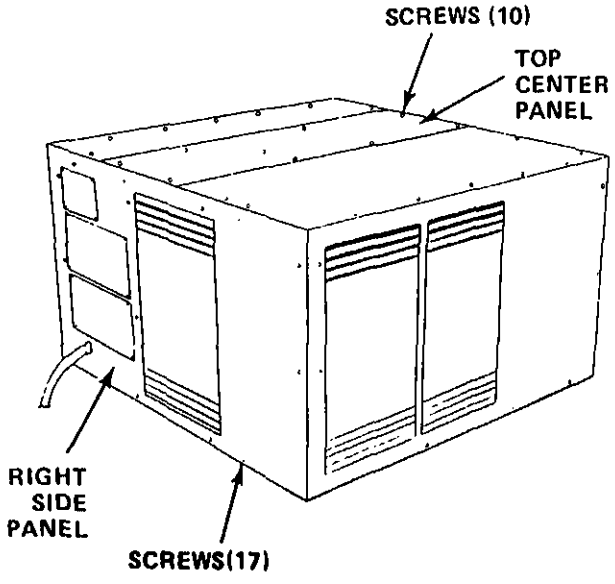
a. Align holes in return air grill with ho
front panel.
b. Secure return air grill with eight (8) scre
c. Install wire in mechanical screw pos
tighten mechanical screw post.



b. Secure top center panel with ten (10

19. Right Side Panel

a. Align holes in right side panel with housing.
b. Secure right side panel with sevent screws.



INITIAL SETUP

Material/Parts
- Right Side Panel Screws (17)
- Top Center Panel Screws (10)
- Return Air Grill Screws (8)
- Air Diffuser Grill Screws (8)
- Control Panel Plate Screws (8)
- Front Panel Screws (14)
- Blower Intake Ring Screws (7)
- Fan Motor Capscrews (4)
- Fan Motor Self-Locking Nuts (4)
- Thermostat Switch Screws (2)

References
- None

Troubleshooting Reference
- AIR CONDITIONER, Malfunction
- FANS, Malfunction 1, Step 3
- AIR OUTPUT, Malfunction 1, Ste
- NOISE, Malfunction 1, Step 1

Approximate Time Required (in minute

Removal	30
Inspection and Repair	20
Installation	30
TOTAL TIME	80

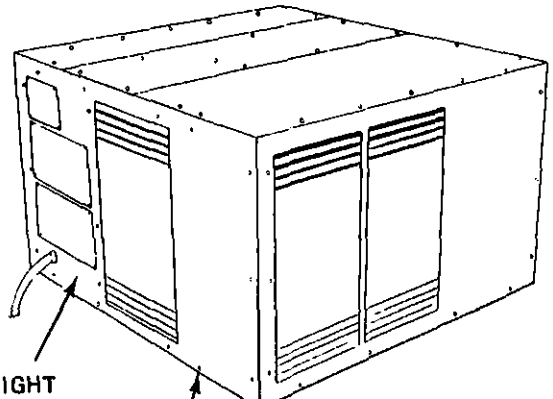
LOCATION/ITEM	REMARKS	ACTION

REMOVAL

RIGHT SIDE OF HOUSING

1. Right Side Panel

a. Remove seventeen (17) screws se side panel.
b. Remove right side panel.



Return Air Grill

a. Loosen mechanical screw post at rea return air grill and remove wire.
b. Remove eight (8) screws securing retur grill.
c. Remove return air grill.

Air Diffuser Grill

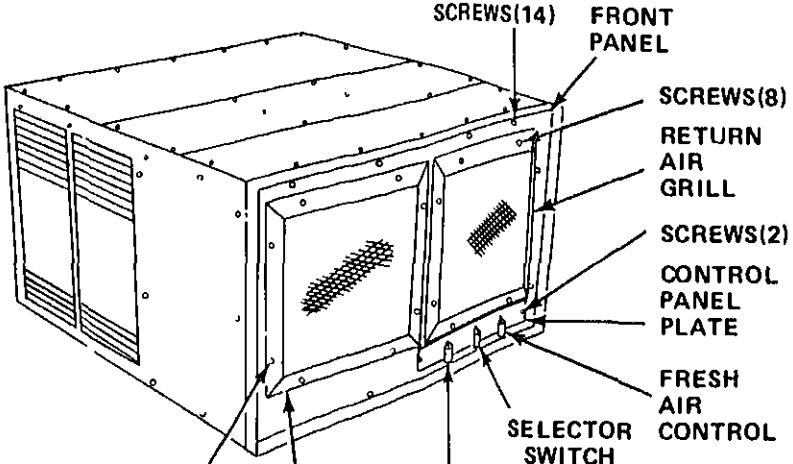
a. Remove eight (8) screws securing air dif grill.
b. Remove air diffuser grill.

Control Panel Plate

a. Loosen setscrews and remove knobs fresh air control, selector switch thermostat switch.
b. Remove two (2) screws securing control p plate.
c. Remove control panel plate.

Front Panel

a. Remove two (2) screws securing therm switch to front panel.
b. Remove fourteen (14) screws securing panel.
c. Remove front panel.



6. Blower Intake Ring

7. Circulating Fan

INSPECTION AND REPAIR

8. Circulating Fan

INSTALLATION

9. Circulating Fan

10. Blower Intake Ring

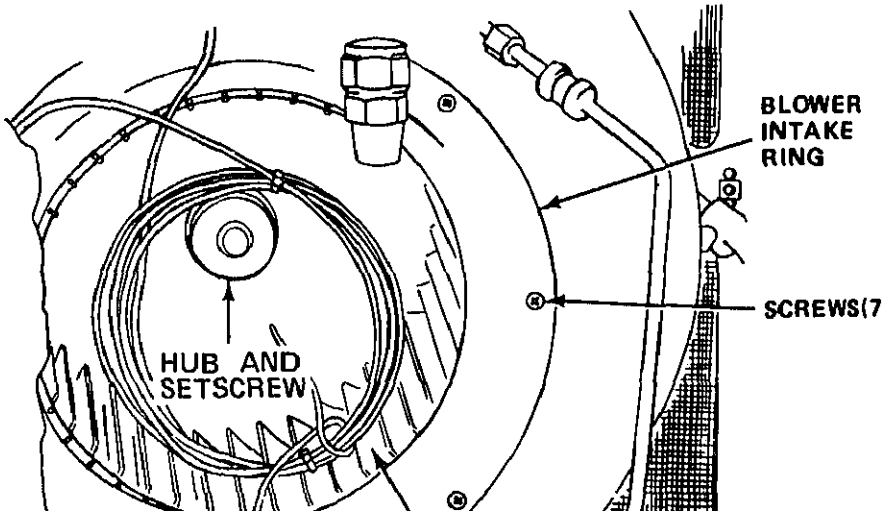
intake ring.
b. Remove blower intake ring.

a. Loosen setscrew in hub of circulating
b. Carefully remove circulating fan.

a. Inspect circulating fan, hub and sets
indication of excessive wear or damag
b. Replace circulating fan if damage to
circulating fan is indicated.
c. Replace setscrew with a 1/4-28UN
.312 inch long setscrew if damage is i

a. Carefully install circulating fan on fa
shaft.
b. Tighten setscrew in circulating fan hu

a. Align holes in blower intake ring with
circulating fan housing.
b. Secure blower intake ring with s
screws.



OF HOUSING

nt Panel

a. Align holes in thermostat switch with holes i front panel.
b. Secure thermostat switch to front panel wit two (2) screws.
c. Align holes in front panel with holes i housing.
d. Secure front panel with fourteen (14) screw

trol Panel Plate

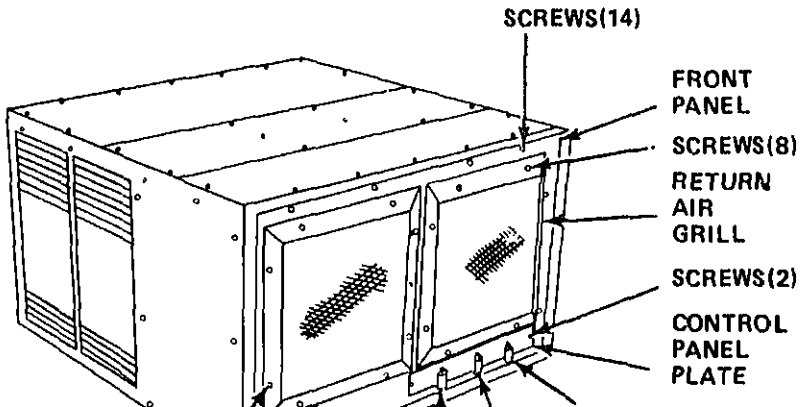
a. Align holes in control panel plate with hole in front panel.
b. Secure control panel plate with two (2 screws.
c. Install three (3) knobs on fresh air contro *selector switch and thermostat switch.*

Diffuser Grill

a. Align holes in air diffuser grill with holes i front panel.
b. Secure air diffuser grill with eight (8) screw

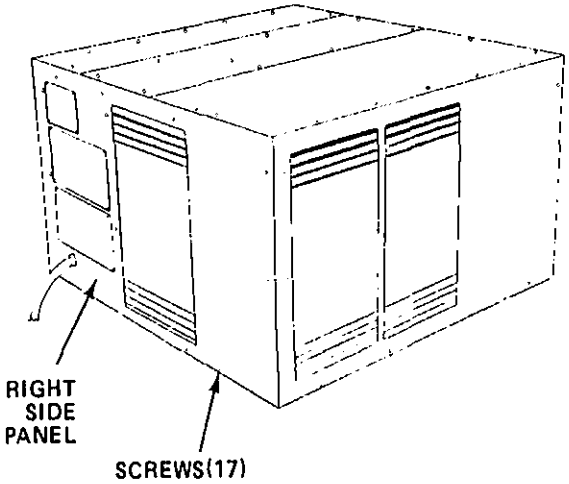
urn Air Grill

a. Align holes in return air grill with holes i front panel.
b. Secure return air grill with eight (8) screws.
c. Install wire in mechanical screw post an tighten mechanical screw post.



15. Right Side Panel

a. Align holes in right side panel with
housing.
b. Secure right side panel with seven
screws.



This task covers:

a. Removal
b. Test
c. Installation

INITIAL SETUP

Material/Parts
- Right Side Panel Screws (17)
- Control Panel Plate Screws (2)
- Selector Switch Screws (2)
- Return Air Grill Screws (8)

References
- Appendix F, Wiring Diagram

Troubleshooting Reference
- AIR CONDITIONER, Malfuncti

Approximate Time Required (in minu

Removal	1
Test	1
Installation	1
TOTAL TIME	3

LOCATION/ITEM	REMARKS	ACTION

REMOVAL

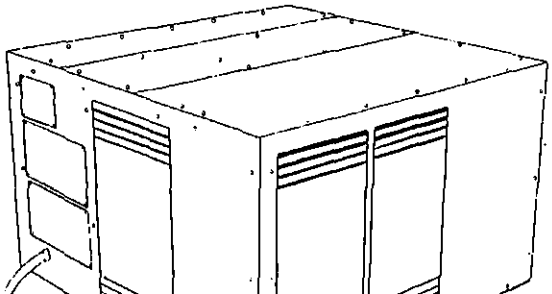
RIGHT SIDE OF HOUSING

1. Right Side Panel

a. Remove seventeen (17) screws s side panel.
b. Remove right side panel.

NOTE

The selector switch may be tested while installed in the air conditioner. To gain access to the selector switch, remove the right side panel.



b. Partially remove return air grill from panel.

Selector Switch

a. Loosen setscrews and remove three (3)
b. Remove two (2) screws securing contro plate to front panel.
c. Remove control panel plate.
d. Tag and disconnect electrical leads selector switch.
e. Remove two (2) screws securing s switch to front panel.
f. Remove selector switch.

ESTING

Selector Switch

a. Tag and disconnect electrical leads selector switch.
b. Using an ohmmeter, measure res between the related contacts at each setting as follows (see Wiring Di Appendix F):
   (1) With selector switch in the position, resistance should be high
   (2) With selector switch in the position, high resistance shou indicated at the compressor termi low resistance should be indicated fan terminal.
   (3) With selector switch in the position, low resistance shou indicated.
c. Replace selector switch if testing in that it is defective.

STALLATION

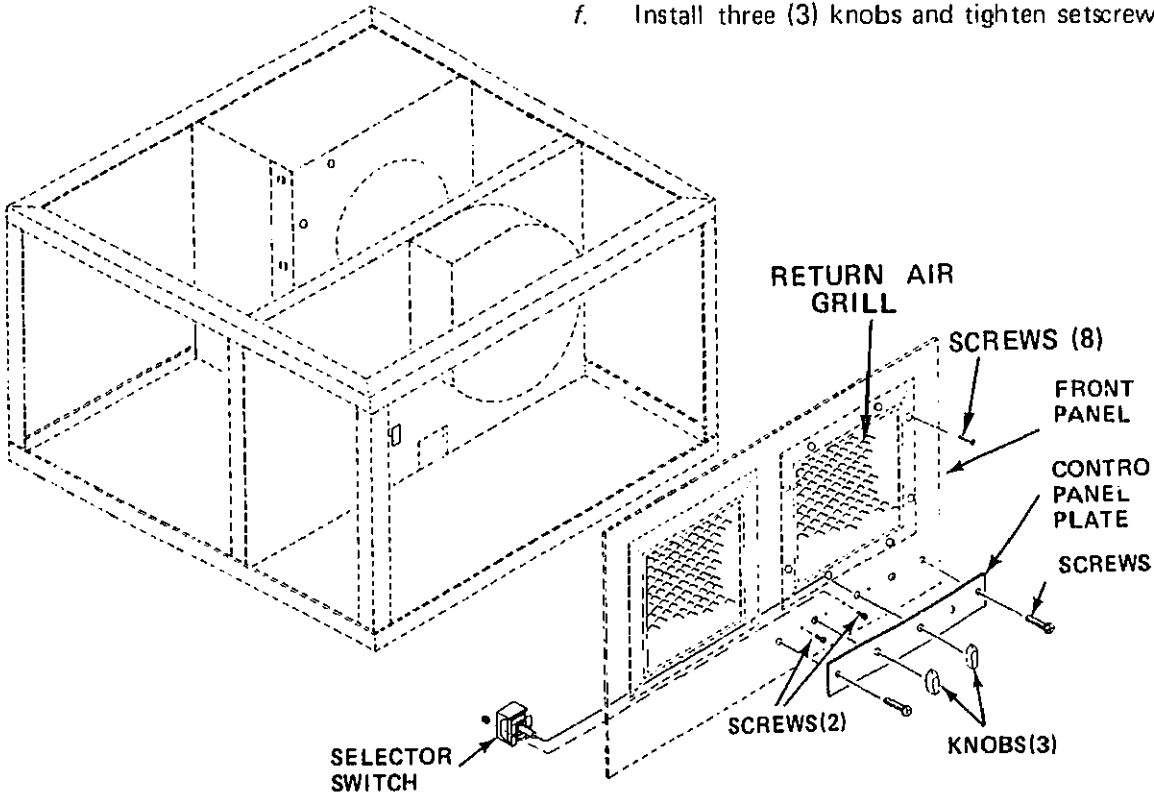
RONT OF HOUSING

Selector Switch

a. Connect electrical leads to selector swit remove tags.
b. Align holes in selector switch with h front panel.
c. Secure selector switch with two (2) scre
d. Align holes in control panel plate wit in front panel.
e. Secure control panel plate with tw screws.

turn Air Grill

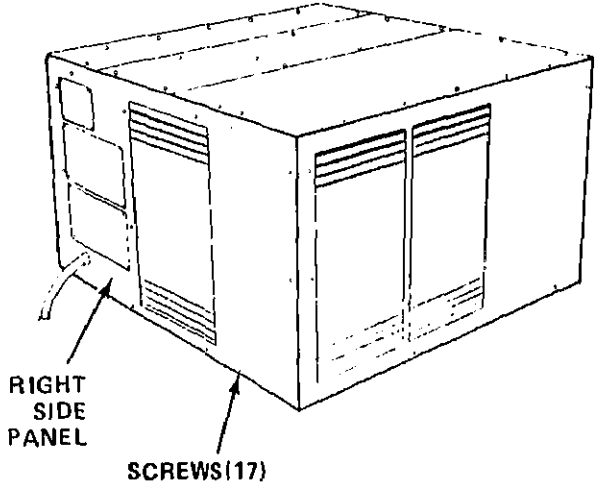
a. Align holes in return air grill with holes i front panel.
b. Secure return air grill to front panel wit eight (8) screws.
a. Connect electrical leads to selector switch an remove tags.
b. Align holes in selector switch with holes i front panel.
c. Secure selector switch with two (2) screws.
d. Align holes in control panel plate with hol in front panel.
e. Secure control panel plate with two (2 screws.
f. Install three (3) knobs and tighten setscrew



RIGHT SIDE OF HOUSING

7. Right Side Panel

a. Align holes in right housing.
b. Secure right side pa screws.



Test

TIAL SETUP

Material/Parts
- Right Side Panel Screws (17)
- Control Panel Plate Screws (2)
- Thermostat Switch Screws (2)
- Return Air Grill Screws (8)

References
- Appendix F, Wiring Diagram

Troubleshooting Reference
- AIR OUTPUT, Malfunction 2, Step 2

Approximate Time Required (in minutes)

Removal	10
Test	10
Installation	10
TOTAL TIME	30

LOCATION/ITEM	REMARKS	ACTION

MOVAL

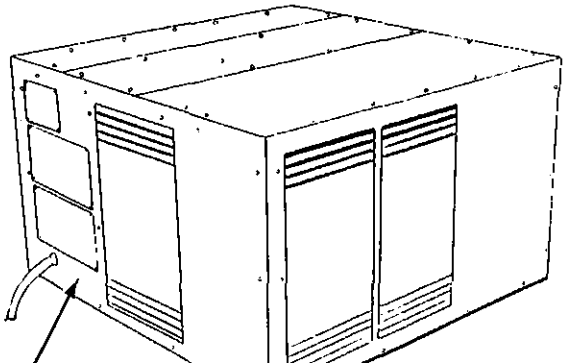
HT SIDE OF HOUSING

Right Side Panel

a. Remove seventeen (17) screws securing r side panel.
b. *Remove right side panel.*

NOTE

The thermostat switch may be tested while installed in the air conditioner. To gain access to the selector switch, remove the right side panel.



b. Partially remove return air grill from fr
panel.

CAUTION

Carefully unwrap thermostat switch sensing bulb from expansion valve sensing line. Use care to prevent damage to sensing bulb.

. Thermostat Switch

a. Loosen setscrews and remove three (3) kno
b. Remove two (2) screws securing control pa
plate to front panel.
c. Remove control panel plate.
d. Tag and disconnect electrical leads fr
thermostat switch.
e. Remove two (2) screws securing thermos
switch to front panel.
f. Unwrap thermostat switch sensing bulb a
remove thermostat switch.

ESTING

. Thermostat Switch

a. Tag and disconnect electrical leads fr
thermostat switch.
b. With the thermostat switch set below ro
temperature, use an ohmmeter and meas
for continuity across the thermostat swi
terminals (see Wiring Diagram, Appendix
c. Verify that the resistance indicated is z
ohms.
d. Move thermostat switch setting to a posit
above room temperature.
e. Verify that the resistance is infinity.
f. Replace thermostat switch if testing indica
that it is defective.

NSTALLATION

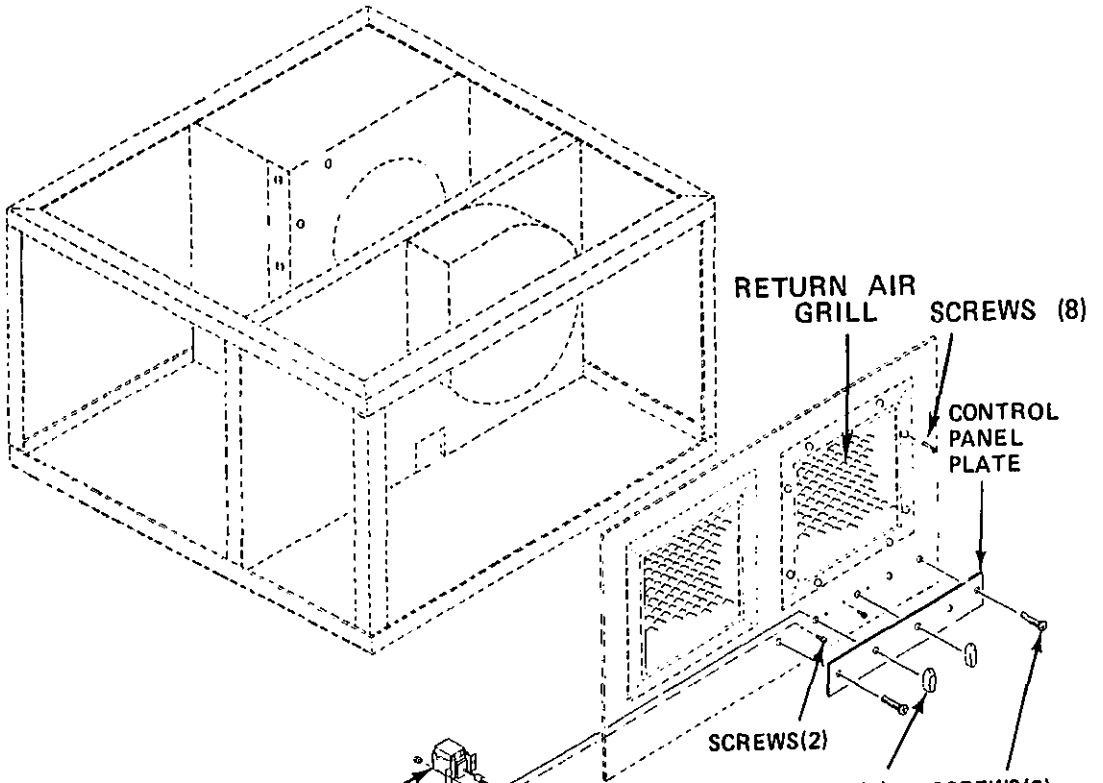
RONT OF HOUSING

. Thermostat Switch

a. Connect electrical leads to thermostat swi
and remove tags.
b. Align holes in thermostat switch with holes
front panel.
c. Secure thermostat switch with two (2) scre
d. Carefully wrap thermostat switch sensing b
around expansion valve sensing line.

n Air Grill

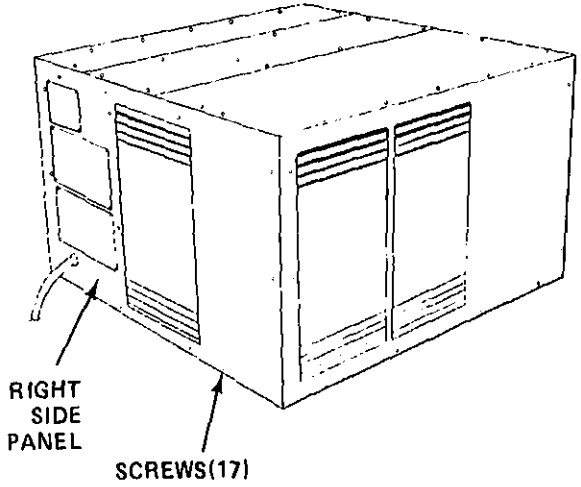
a. Align holes in return air grill with holes in front panel.
b. Secure return air grill to front panel with eight (8) screws.
a. Connect electrical leads to thermostat switch and remove tags.
b. Align holes in thermostat switch with holes in front panel.
c. Secure thermostat switch with two (2) screws.
d. Align holes in control panel plate with holes in front panel.
e. Secure control panel plate with two (2) screws.
f. Install three (3) knobs and tighten setscrews.



RIGHT SIDE OF HOUSING

7. *Right Side Panel*

a. Align holes in right side
housing.
b. Secure right side panel
screws.



b. Test

INITIAL SETUP

Material/Parts
Right Side Panel Screws (17)
Capacitor Bracket Screws (2)

References
None

Troubleshooting Reference
FANS, Malfunction 1, Step 4

Approximate Time Required (in minutes)

Removal	10
Testing	5
Installation	10
TOTAL TIME	25

LOCATION/ITEM	REMARKS	ACTION

REMOVAL

RIGHT SIDE OF HOUSING

1. Right Side Panel

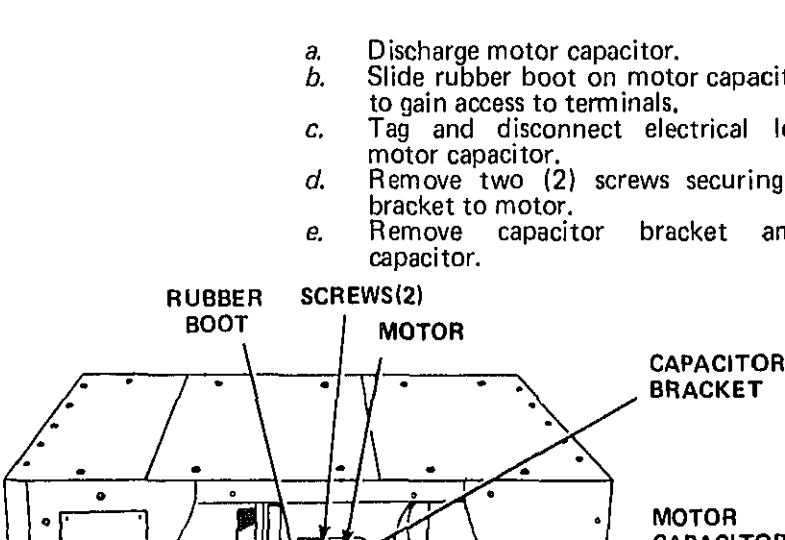
a. Remove seventeen (17) screws sec
side panel.
b. Remove right side panel.

WARNING

Death or serious injury may occur if capacitor is not discharged prior to removal.

2. Motor Capacitor

a. Discharge motor capacitor.
b. Slide rubber boot on motor capaci
to gain access to terminals.
c. Tag and disconnect electrical l
motor capacitor.
d. Remove two (2) screws securing
bracket to motor.
e. Remove capacitor bracket an
capacitor.



LOCATION/ITEM	REMARKS	ACTION
ESTING		
GHT SIDE OF HOUSING		
Motor Capacitor		*a.* Test motor capacitor with a suitable capacit tester for continuity, leakage short, a capacitance. *b.* The motor capacitor is rated at 3 microfara 370 volts. *c.* Replace motor capacitor if testing indicat that it is defective.
STALLATION		
Motor Capacitor		*a.* Install motor capacitor in capacitor brack *b.* Align holes in capacitor bracket and motor. *c.* Secure capacitor bracket with two (2) screv *d.* Connect electrical leads to motor capaci

b. Test

INITIAL SETUP

Material/Parts
Left Side Panel Screws (17)

References
None

Troubleshooting Reference
None

Approximate Time Required (in minutes)

Removal	10
Testing	10
Installation	10
TOTAL TIME	30

LOCATION/ITEM	REMARKS	ACTION

REMOVAL

LEFT SIDE OF HOUSING

1. Left Side Panel

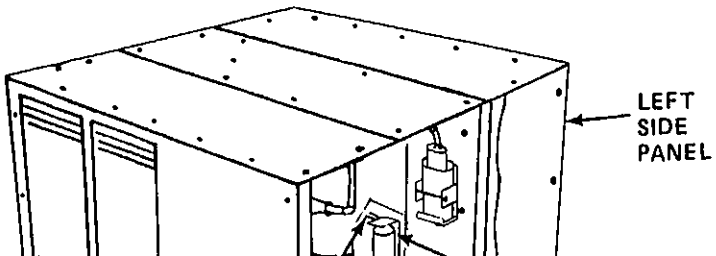
a. Remove seventeen (17) screws se
side panel to housing.
b. Remove left side panel.

WARNING

Death or serious injury may occur if capacitor is not discharged prior to removal.

2. Start Capacitor

a. Pull start capacitor from bracket.
b. Remove cap from start capacitor.
c. Discharge start capacitor.
d. Tag and disconnect electrical leads
capacitor.



LOCATION/ITEM	REMARKS	ACTION
TESTING		
LEFT SIDE OF HOUSING		
3. Start Capacitor		*a.* Test start capacitor with a suitab tester for continuity, leakage capacitance. *b.* The start capacitor is rate microfarads, 125 volts AC. *c.* Replace start capacitor if testi that it is defective.
INSTALLATION		
4. Start Capacitor		*a.* Connect electrical leads to start c remove tags. *b.* Cover electrical leads with cap.

INITIAL SETUP

Material/Parts
Left Side Panel Screws (17)

Troubleshooting Reference
None

Approximate Time Required (in minute

Removal	10
Testing	10
Installation	10
TOTAL TIME	30

References
None

LOCATION/ITEM	REMARKS	ACTION

REMOVAL

LEFT SIDE OF HOUSING

1. Left Side Panel

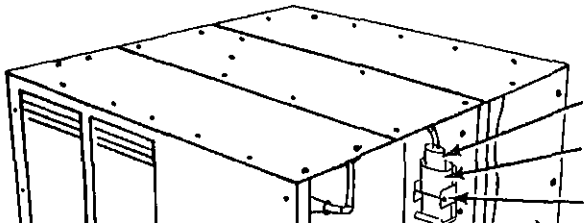
a. Remove seventeen (17) screws s side panel to housing.
b. Remove left side panel.

WARNING

Death or serious injury may occur if capacitor is not discharged prior to removal.

2. Run Capacitor

a. Discharge run capacitor.
b. Remove cap from run capacitor.
c. Tag and disconnect electrical lea capacitor.
d. Loosen capacitor bracket screw.
e. Remove run capacitor from capac



LOCATION/ITEM	REMARKS	ACTION
TESTING		
LEFT SIDE OF HOUSING		
3. Run Capacitor		*a.* Test run capacitor with a suitable ca tester for continuity, leakage shor capacitance. *b.* The run capacitor is rated at 7.5 micr 370 volts. *c.* Replace run capacitor if testing indica it is defective.
INSTALLATION		
4. Run Capacitor		*a.* Install run capacitor in capacitor brack *b.* Tighten capacitor bracket screw. *c.* Connect electrical leads to run capaci

a. Removal
b. Test
c. Installation

INITIAL SETUP

Material/Parts
- Top Center Panel Screws (10)
- Top Rear Panel Screws (10)
- Start Relay Screw (1)
- Start Relay Nut (1)

References
- None

Troubleshooting Reference
- COMPRESSOR, Malfunction 1

Approximate Time Required (in mir
- Removal
- Testing
- Installation
- TOTAL TIME

LOCATION/ITEM	REMARKS	ACTION

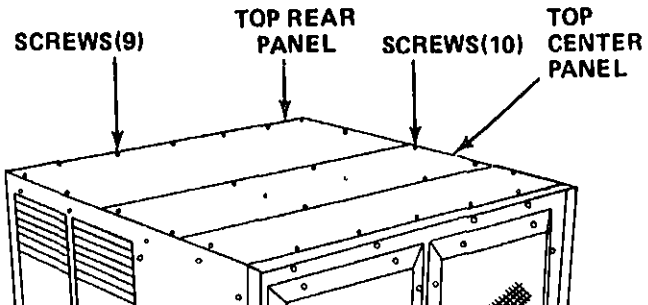
REMOVAL

TOP OF HOUSING

1. Top Center Panel
   - *a.* Remove ten (10) screws secur panel to housing.
   - *b.* Remove top center panel.
2. Top Rear Panel
   - *a.* Remove nine (9) screws sec panel to housing.
   - *b.* Remove top rear panel.

NOTE

The start relay may be tested while installed in the air conditioner. To gain access to the start relay, remove the top center and top rear panels.



TOP OF HOUSING

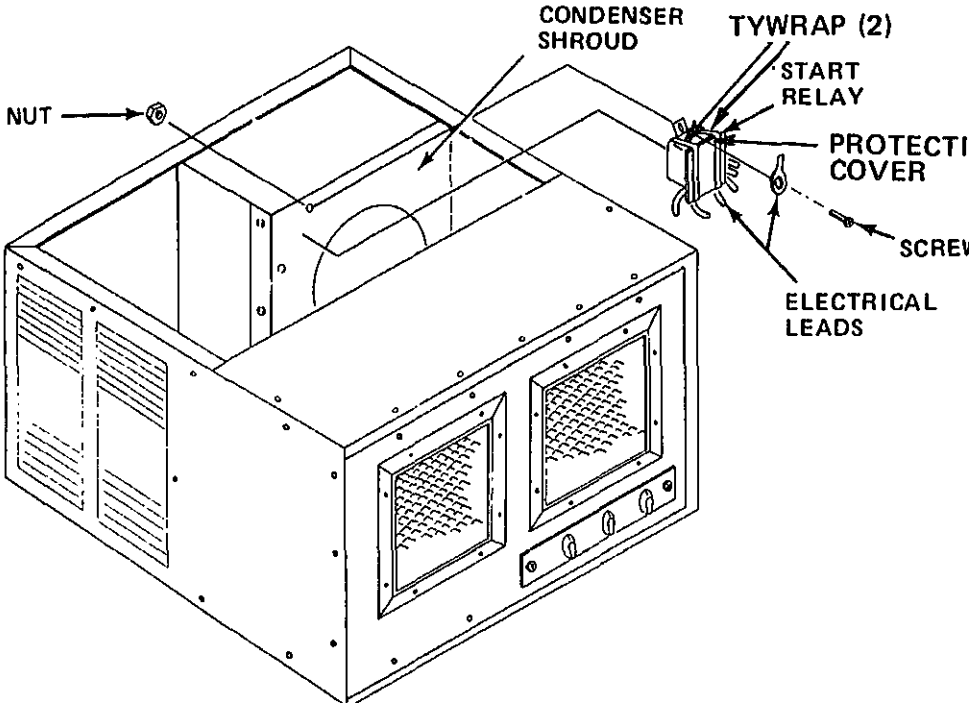
3. Start Relay

a. Slip two (2) tywraps from around star
b. Remove protective cover.
c. Tag and disconnect electrical leads fro relay.
d. Remove one (1) screw and self-lock securing start relay to condenser shrou
e. Remove electrical lead and start relay.

TESTING

4. Start Relay

a. Tag and disconnect electrical leads fro relay.
b. Using an ohmmeter, measure cor across start relay terminals.
c. Replace start relay if there is NO con



OP OF HOUSING

Start Relay

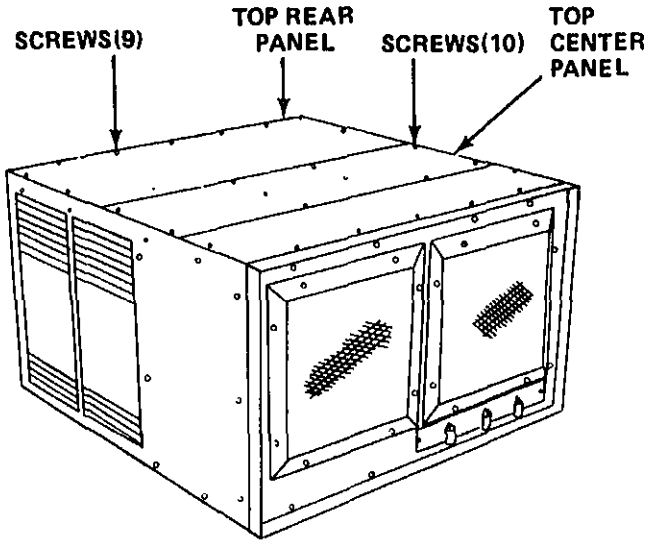
a. Connect electrical leads to start rel
remove tags.
b. Align hole in start relay with h
condenser shroud.
c. Secure electrical lead and start relay w
(1) screw and self-locking nut.
d. Replace protective cover and secure w
(2) tywraps.

Top Rear Panel

a. Align holes in top rear panel and housi
b. Secure top rear panel with nine (9) scr

Top Center Panel

a. Align holes in top center panel with h
top rear and top front panels.
b. Secure top center panel with ten (10)



a. Removal
b. Inspection
c. Test
d. Repair
e. Installation

INITIAL SETUP

Material/Parts
- Top Center Panel Screws (10)
- Top Front Panel Screws (7)
- Top Rear Panel Screws (9)
- Right Side Panel Screws (17)
- Left Side Panel Screws (17)

References
- Apprendix F, Wiring Diagram

Troubleshooting Reference
- COMPRESSOR, Malfunction 1, Step 2

Approximate Time Required (in minutes)

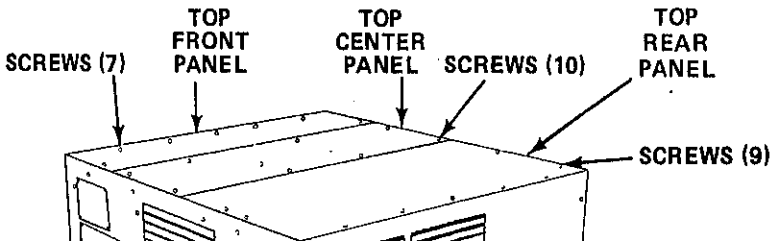
Removal	30
Inspection and Testing	30
Repair	30
Installation	30
TOTAL TIME	120

LOCATION/ITEM	REMARKS	ACTION

REMOVAL

TOP AND RIGHT SIDE OF HOUSING

1. Top Center Panel
   - *a.* Remove ten (10) screws securing to panel.
   - *b.* Remove top center panel.
2. Top Front Panel
   - *a.* Remove seven (7) screws securing t panel.
   - *b.* Remove top front panel.
3. Top Rear Panel
   - *a.* Remove nine (9) screws securing panel.
   - *b.* Remove top rear panel.
4. Right Side Panel
   - *a.* Remove seventeen (17) screws secur side panel.
   - *b.* Remove right side panel.



b. Remove left side panel.

iring

Remove only those electrical leads or wir
show signs of damage.

ECTION AND TESTING

SING INTERIOR

ectrical Leads

a. Inspect all electrical leads for crack
frayed insulation material.
b. Inspect all terminals for damaged con
c. Disconnect each end of the fol
electrical leads and using a multimeter,
low ohms scale, touch probes to ends o
electrical lead and verify that th
continuity (see Wiring Diagram, Appen
(1) K1-2 ..... B1-S
(2) K1-5 ..... B1-CO
(3) K1-1 .....
(4) K1-4 .....
(5) K1-4 .....
(6) S1-2 .....
(7) S2-2 ..... B
(8) K1-2 .....
(9) C2 .....
d. Repair or replace any electrical lead if t
NO continuity.

ower Cable

a. Inspect power cable for cracked or
insulation material.
b. Inspect all terminals for damaged con
c. Disconnect each of the power
terminations and using a multimeter,
low ohms scale, touch probes to
termination and their corresp
connector pin and verify that th
continuity (see Wiring Diagram, Appen
(1) K1-4
(2) K1-5
(3) GROUND
d. Repair or replace power cable if there
continuity.

AIR

TOP AND RIGHT SIDE OF HOUSING

10. Right Side Panel

a. Align holes in right side panel with hol housing.
b. Secure right side panel with seventeen screws.

11. Top Rear Panel

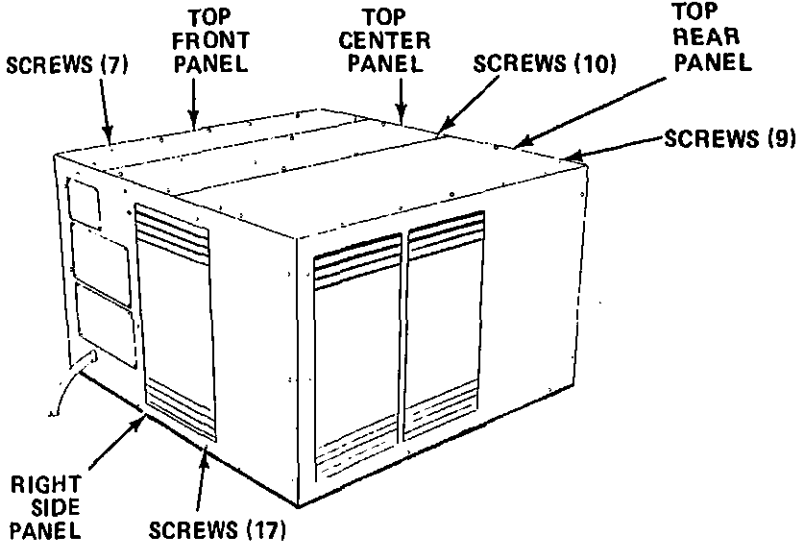
a. Align holes in top rear panel with hol housing.
b. Secure top rear panel with nine (9) screw

12. Top Front Panel

a. Align holes in top front panel with hol housing.
b. Secure top front panel with seven (7) sc

13. Top Center Panel

a. Align holes in top center panel with ho top front and top rear panels.
b. Secure top center panel with ten (10) sc



Removal
Inspection

NITIAL SETUP
Material/Parts
Left Side Panel Screws (17)

References
None

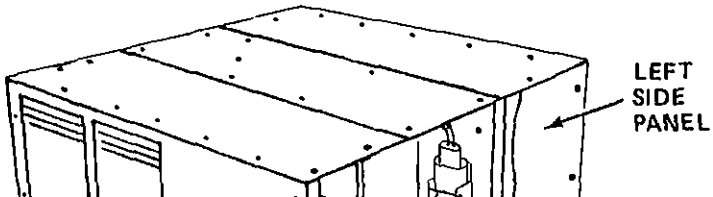
c. Installation

Troubleshooting Reference
AIR CONDITIONER, Malfunction 2,

Approximate Time Required (in minutes)

Removal	10
Inspection	5
Installation	10
TOTAL TIME	25

LOCATION/ITEM	REMARKS	ACTION
REMOVAL		
LEFT SIDE OF HOUSING		
1. Left Side Panel		*a.* Remove seventeen (17) screws secu side panel to housing. *b.* Remove left side panel.
INSPECTION		
2. Compressor		*a.* Visually inspect compressor for damag *b.* Inspect compressor tubing and fitt leaks. *c.* Tighten fittings and report damaged c to direct support maintenance personn
INSTALLATION		
3. Left Side Panel		*a.* Align holes in left side panel with housing. *b.* Secure left side panel with seventc screws.



Material/Parts

Air Diffuser Grill Screws (8)
Control Panel Plate Screws (2)
Front Panel Screws (14)
Top Center Panel Screws (10)
Top Front Panel Screws (7)
Top Rear Panel Screws (9)
Right Side Panel Screws (17)
Rear Panel Screws (14)
Return Air Grill Screws (8)

References

None

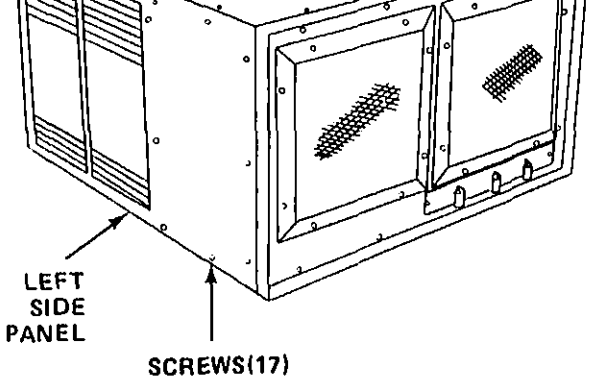
Troubleshooting Reference

None

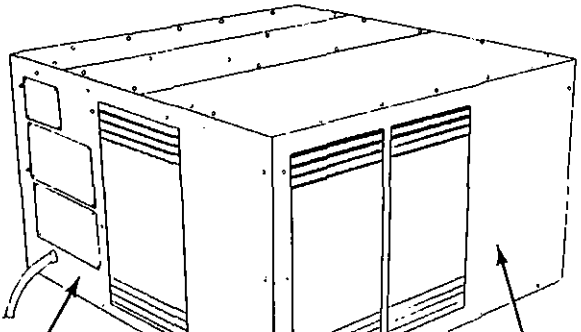
Approximate Time Required (in minu

Removal	3
Inspection	1
Installation	3
TOTAL TIME	7

LOCATION/ITEM	REMARKS	ACTION
REMOVAL		
TOP AND LEFT SIDE OF HOUSING		
1. Top Center Panel		*a.* Remove ten (10) screws securi panel. *b.* Remove top center panel.
2. Top Front Panel		*a.* Remove seven (7) screws secu panel. *b.* Remove top front panel.
3. Top Rear Panel		*a.* Remove nine (9) screws secu panel. *b.* Remove top rear panel.
4. Left Side Panel		*a.* Remove seventeen (17) screws side panel. *b.* Remove left side panel.



LOCATION/ITEM	REMARKS	ACTION
MOVAL		
HT SIDE AND REAR OF HOUSING		
Right Side Panel		*a.* Remove seventeen (17) screws securing side panel. *b.* Remove right side panel.
Rear Panel		*a.* Remove fourteen (14) screws securing panel. *b.* Remove rear panel.



ONT OF HOUSING

Return Air Grill

a. Loosen mechanical screw post at rea return air grill and remove wire.
b. Remove eight (8) screws securing retur grill.
c. Remove return air grill.

Air Diffuser Grill

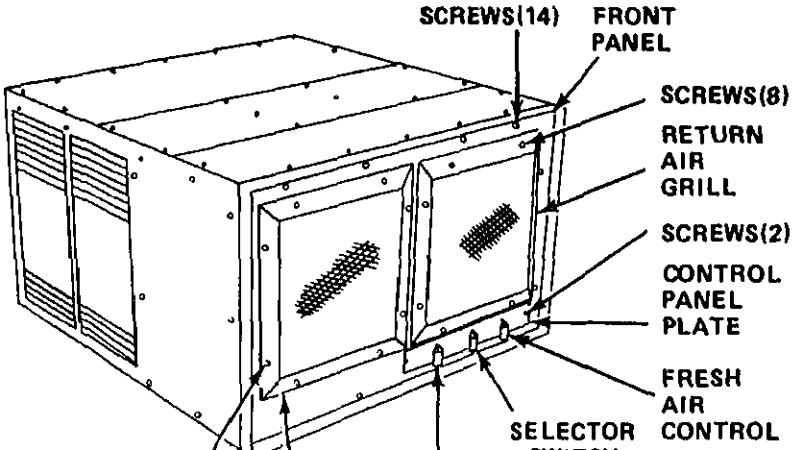
a. Remove eight (8) screws securing air dif grill.
b. Remove air diffuser grill.

Control Panel Plate

a. Loosen setscrews and remove knobs fresh air control, selector switch thermostat switch.
b. Remove two (2) screws securing control plate.
c. Remove control panel plate.

Front Panel

a. Remove two (2) screws securing therm switch to front panel.
b. Remove fourteen (14) screws securing panel.
c. Remove front panel.



OUSING INTERIOR

Refrigerant Piping

a. Visually inspect all piping for dan condition.
b. Inspect all fittings for leaks.
c. Tighten fittings and report damaged cond to direct support maintenance personnel.

STALLATION

ONT OF HOUSING

Front Panel

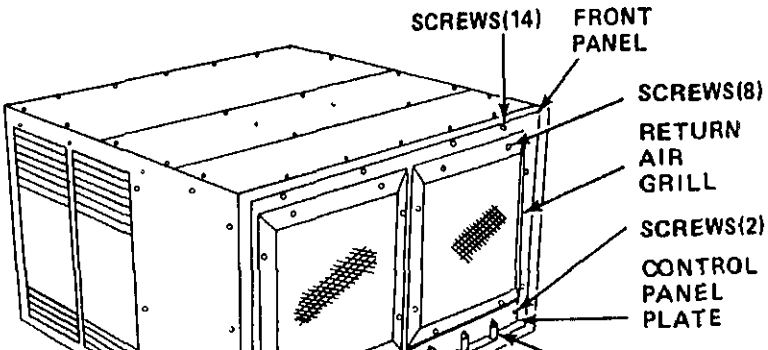
a. Align holes in thermostat switch with ho front panel.
b. Secure thermostat switch to front panel two (2) screws.
c. Align holes in front panel with hol housing.
d. Secure front panel with fourteen (14) sc

. Control Panel Plate

a. Align holes in control panel plate with in front panel.
b. Secure control panel plate with two screws.
c. Install three (3) knobs.

. Air Diffuser Grill

a. Align holes in air diffuser grill with ho front panel.
b. Secure air diffuser grill with eight (8) sc



6. Return Air Grill

a. Align holes in return air grill with
front panel.
b. Secure return air grill with eight (8) sc
c. Install wire in mechanical screw p
tighten mechanical screw post.

NSTALLATION

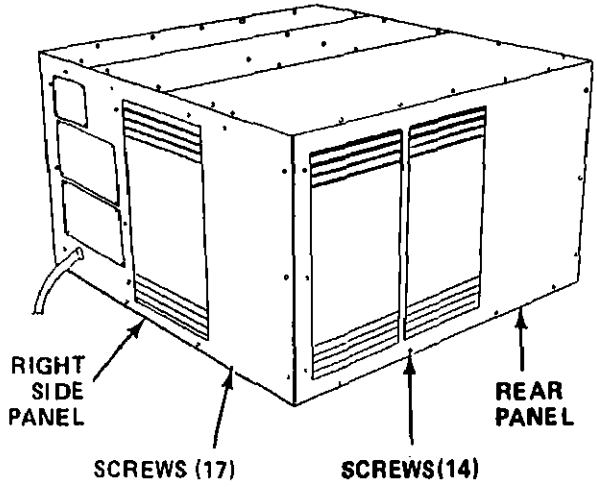
IGHT SIDE AND REAR OF HOUSING

6. Rear Panel

a. Align holes in rear panel with h
housing.
b. Secure rear panel with fourteen (14)

7. Right Side Panel

a. Align holes in right side panel with
housing.
b. Secure right side panel with seventee
screws.



18. Left Side Panel

a. Align holes in left side panel wit
housing.
b. Secure left side panel with sever
screws.

19. Top Rear Panel

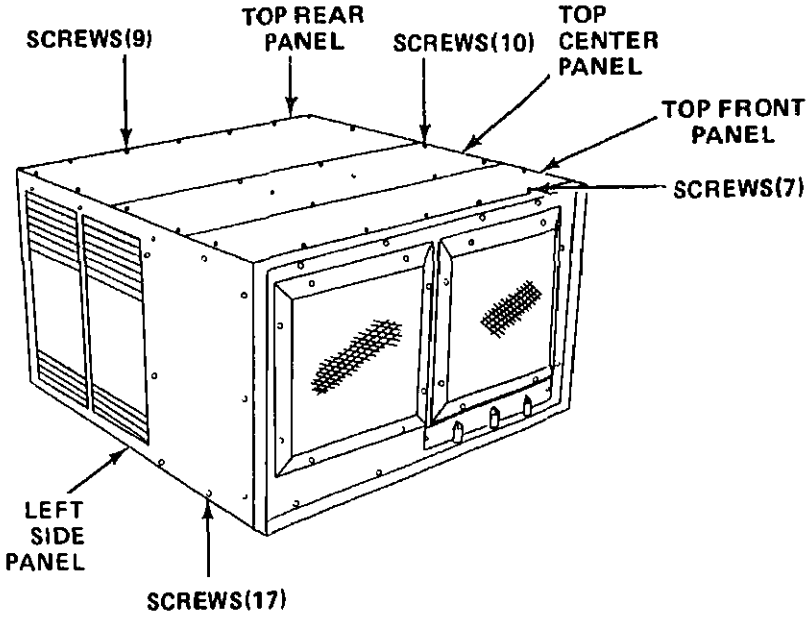
a. Align holes in top rear panel wit
housing.
b. Secure top rear panel with nine (9)

20. Top Front Panel

a. Align holes in top front panel wit
housing.
b. Secure top front panel with seven

21. Top Center Panel

a. Align holes in top center panel wit
top front and top rear panels.
b. Secure top center panel with ten (1



a. Removal
b. Inspection
c. Service
d. Installation

INITIAL SETUP

Material/Parts
Air Diffuser Grill Screws (8)
Left Side Panel Screws (17)
Dry Cleaning Solvent

References
None

Troubleshooting Reference
AIR OUTPUT, Malfunction 1, Step

Approximate Time Required (in minutes)

Removal	10
Inspection and Service	10
Installation	10
TOTAL TIME	30

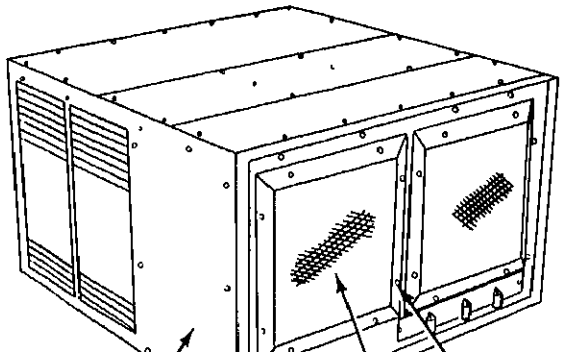
LOCATION/ITEM	REMARKS	ACTION

REMOVAL

FRONT AND LEFT SIDE OF HOUSING

1. Air Diffuser Grill
   a. Remove eight (8) screws securing a grill to front panel.
   b. Remove air diffuser grill.

2. Left Side Panel
   a. Remove seventeen (17) screws sec side panel to housing.
   b. Remove left side panel.



Dry cleaning solvent, P-D-680 or P-S-661, used to clean parts is potentially dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100° F (38° C).

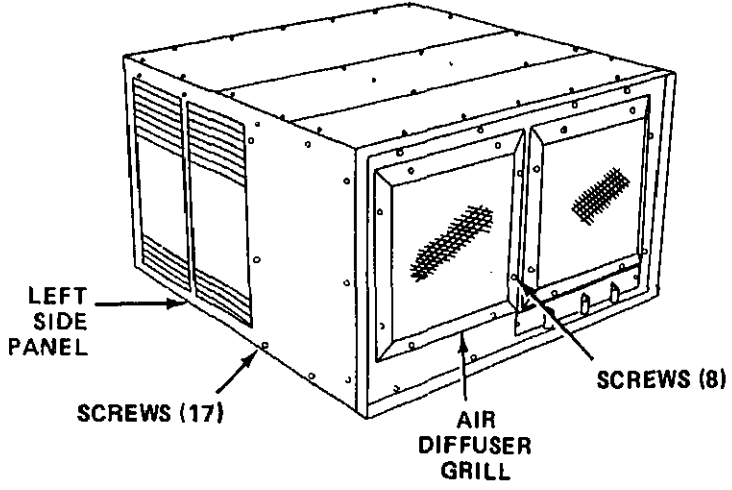
WARNING

Do not use compressed air for cleaning purposes except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

Evaporator Coil

a. Inspect evaporator coil for cleanliness.
b. Scrub the external portion of evaporato with a stiff bristle brush to remove sca corrosion.
c. Use low pressure compressed air to blo loose material.
d. Wipe evaporator coil with a cloth mois with dry cleaning solvent, specifi P-D-680 or P-S-661.
e. Inspect evaporator coil for leaks.
f. Straighten bent fins.
g. Report damaged condition to direct su maintenance personnel.

Air Diffuser Grill	*a.* Align holes in air diffuser grill with hol front panel. *b.* Secure air diffuser grill with eight (8) sc
Left Side Panel	*a.* Align holes in left side panel with hol housing. *b.* Secure left side panel with seventeen screws.



a. Removal
b. Inspection
c. Service
d. Installation

INITIAL SETUP

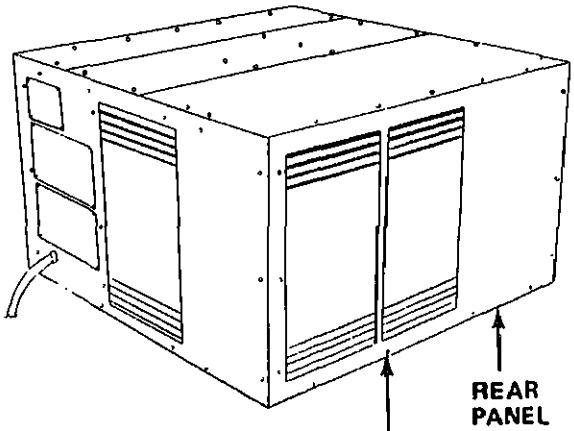
Material/Parts
Rear Panel Screws (14)
Dry Cleaning Solvent

Troubleshooting Reference
AIR CONDITIONER, Malfu
AIR OUTPUT, Malfunction

Approximate Time Required (in m
Removal
Inspection and Service
Installation
TOTAL TIME

References
None

LOCATION/ITEM	REMARKS	ACTION
REMOVAL		
REAR OF HOUSING		
1. Rear Panel		*a.* Remove fourteen (14) scre panel to housing. *b.* Remove rear panel.



dangerous to personnel and property. Avoid repeated and prolonged skin contact. Do not use near open flame or excessive heat. Flash point of solvent is 100° F (38° C).

WARNING

Do not use compressed air for cleaning purposes except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

2. Condenser Coil

a. Inspect condenser coil for cleanliness.
b. Scrub the external portion of conde with a stiff bristle brush to remove s corrosion.
c. Use low pressure compressed air to b loose material.
d. Wipe condenser coil with a cloth m with dry cleaning solvent, spec P-D-680 or P-S-661.
e. Inspect condenser coil for leaks.
f. Straighten bent fins.
g. Report damaged condition to direct maintenance personnel.

INSTALLATION

REAR OF HOUSING

3. Rear Panel

a. Align holes in rear panel with h housing.
b. Secure rear panel with fourteen (14)

a. Removal
b. Inspection
c. Installation

INITIAL SETUP

Material/Parts
Rear Panel Screws (14)

References
None

Troubleshooting Reference
None

Approximate Time Required (in minu

Removal	1
Inspection	
Installation	1
TOTAL TIME	2

LOCATION/ITEM	REMARKS	ACTION

NOTE

The sight glass may be inspected by looking through the louvers in the left side panel. If you cannot see the sight glass through the left side panel, then remove the rear panel.

REMOVAL

REAR OF HOUSING

1. Rear Panel

a. Remove fourteen (14) screws panel to housing.
b. Remove rear panel.

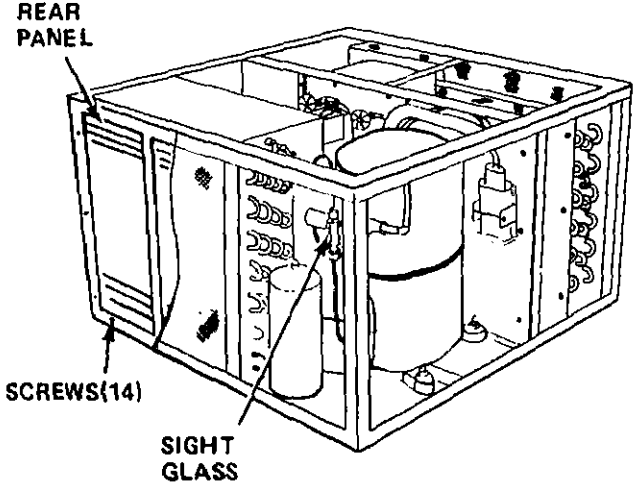
INSPECTION

2. Sight Glass

a. With air conditioner operating a cooling air, inspect sight glass.
b. Yellow appearance of humidi indicates moisture in system. milky flow in refrigerant indica erant charge.
c. Report presence of these conditio support maintenance personnel.

3. Rear Panel

a. Align holes in rear panel w
housing.
b. Secure rear panel with fourteen



b. Inspection

c. Installation

INITIAL SETUP

Material/Parts
- Top Center Panel Screws (10)
- Top Front Panel Screws (7)
- Right Side Panel Screws (17)

References
- None

Troubleshooting Reference
- None

Approximate Time Required (in minu

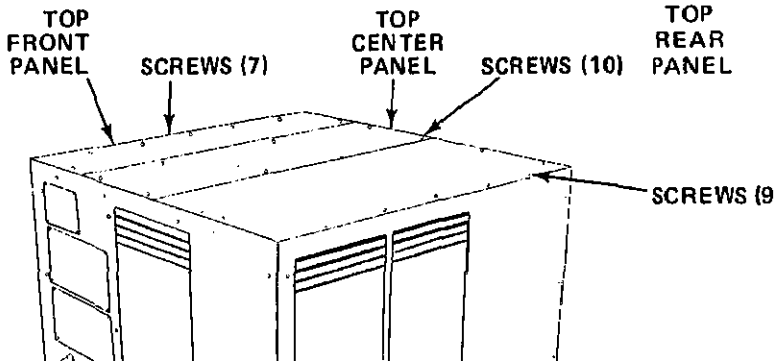
Removal	1
Inspection	1
Installation	1
TOTAL TIME	3

LOCATION/ITEM	REMARKS	ACTION

REMOVAL

TOP AND RIGHT SIDE OF HOUSING

1. Top Center Panel
   - *a.* Remove ten (10) screws securir panel.
   - *b.* Remove top center panel.
2. Top Front Panel
   - *a.* Remove seven (7) screws securi panel.
   - *b.* Remove top front panel.
3. Right Side Panel
   - *a.* Remove seventeen (17) screws s side panel.
   - *b.* Remove right side panel.

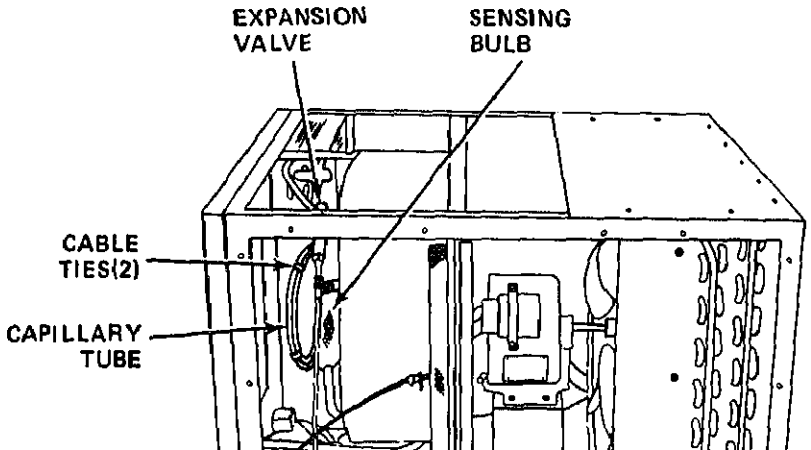


Expansion Valve	*a.* Inspect expansion valve for cracke damaged condition. *b.* Inspect capillary tube for kinks or breaks *c.* Inspect sensing bulb for security attachment and be sure it is comp covered with insulation tape. *d.* Report damaged condition to direct su maintenance personnel.

NSTALLATION

OP AND RIGHT SIDE OF HOUSING

. Right Side Panel	*a.* Align holes in right side panel with ho housing. *b.* Secure right side panel with seventeen screws.
. Top Front Panel	*a.* Align holes in top front panel with ho housing. *b.* Secure top front panel with seven (7) s
. Top Center Panel	*a.* Align holes in top center panel with ho top front and top rear panels. *b.* Secure top center panel with ten (10) s



not required.

c. Before placing the unit in storage, the next scheduled preventive maintenance che services should be performed, and all known deficiencies corrected.

his chapter contains all the necessary maintenance instructions for direct support maintenance p
keep your air conditioner in good repair.

INDEX

Section I. REPAIR PARTS, SPECIAL TOOLS, TMD AND SUPPORT EQUIPMENT

1. MAINTENANCE REPAIR PARTS

epair parts for the air conditioner are listed and illustrated in TM 5-4120-341-23P.

2. COMMON TOOLS AND EQUIPMENT

or common tools and equipment, refer to the Table of Organization and Equipment (TOE).

3. SPECIAL TOOLS AND TEST EQUIPMENT

o special tools or test equipment are required.

4. CONSUMABLE MATERIALS

Item No.	Name	Specification
5	Refrigerant	R-12

5-5. GENERAL

a. This section provides information useful in diagnosing and correcting unsatisfactory operat failure of the air conditioner. Each malfunction is followed by a list of probable causes and actions t to remedy the malfunction. You should perform the tests/inspections and corrective actions in the listed.

b. This manual cannot list all malfunctions that may occur; nor all tests or inspections and cor actions. If a malfunction is not listed or is not corrected by listed corrective actions, notify your supe

5-6. DIRECT SUPPORT TROUBLESHOOTING TABLE

Malfunction
Test or Inspection
Corrective Action

COMPRESSOR

1. COMPRESSOR WILL NOT START

Step 1. Check compressor for proper operation and damage.
Replace defective compressor (para. 5-9).

2. COMPRESSOR CYCLES INTERMITTENTLY

Step 1. Inspect sight glass for proper amount of refrigerant.
Add refrigerant as required (para. 5-8).
Step 2. Check for high discharge pressure.
Discharge refrigerant from system (para. 5-8).
Step 3. Check for air in refrigerant system.
Purge refrigerant system (para. 5-8).

AIR CONDITIONER

1. HIGH DISCHARGE PRESSURE

Step 1. Check for excessive refrigerant in system.
Discharge refrigerant from system (para. 5-8).
Step 2. Check for air in refrigerant system.
Purge refrigerant system (para. 5-8).

2. LOW DISCHARGE PRESSURE

Step 1. Check to see if compressor is pumping.
Replace defective compressor (para. 5-9).
Step 2. Inspect sight glass for proper amount of refrigerant.
Add refrigerant as required (para. 5-8).

Step 4. Inspect expansion valve for proper operation and damage.
Replace defective expansion valve (para. 5-15).

. LOW SUCTION PRESSURE

Step 1. Inspect expansion valve for proper operation.
Replace defective expansion valve (para. 5-15).
Step 2. Check to see if dehydrator is clogged or defective.
Remove restriction or replace dehydrator (para. 5-13).

. LOW SUCTION AND DISCHARGE PRESSURE

Step 1. Inspect sight glass for proper amount of refrigerant.
Add refrigerant as required (para. 5-8).
Step 2. Inspect refrigerant piping for leaks.
Repair leaks or replace piping (para. 5-10).
Step 3. Inspect expansion valve for proper operation and damage.
Replace defective expansion valve (para. 5-15).

5-7. GENERAL

The following information pertains to all procedures for the direct support maintenance personnel.

INITIAL SETUP

Applicable Configurations
All

Test Equipment
None

Special Tools
None

Personnel Required
Direct Support Maintenance

Special Environmental Conditions
None

General Safety Instructions
Disconnect the power source before pe
any maintenance function. Do not use co
air for cleaning purposes except where re
less than 30 psi and then only with effec
guarding and personal protective equipmer

emoval
est

c. Service
d. Installation

AL SETUP

Material/Parts
- Top Center Panel Screws (10)
- Dry Nitrogen
- Refrigerant R-12
- Rear Panel Screws (14)

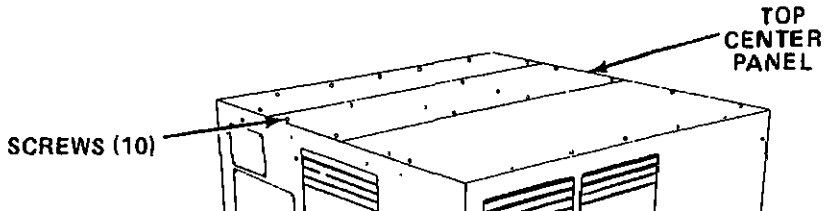
References
- Paragraph 5-13

Troubleshooting Refeence
- COMPRESSOR, Malfunction 2, Step 1
- COMPRESSOR, Malfunction 2, Step 2
- COMPRESSOR, Malfunction 2, Step 3
- AIR CONDITIONER, Malfunction 1, Ste
- AIR CONDITIONER, Malfunction 1, Ste
- AIR CONDITIONER, Malfunction 3, Ste
- AIR CONDITIONER, Malfunction 3, Ste
- AIR CONDITIONER, Malfunction 5, Ste

Approximate Time Required (in minutes)

Removal	10
Test	30
Service	720
Installation	10
TOTAL TIME	770

LOCATION/ITEM	REMARKS	ACTION
OVAL		
AND REAR OF HOUSING		
op Center Panel		a. Remove ten (10) screws securing top ce panel. b. Remove top center panel.
ear Panel		a. Remove fourteen (14) screws securing panel. b. Remove rear panel.



Refrigerant System

a. Remove caps from discharge and s service valves.

b. Pressure check the refrigerant syst follows:

(1) Connect suction pressure gua suction service valve.

(2) Start air conditioner

(3) Connect discharge pressure gua discharge service valve.

(4) Open discharge and suction valves.

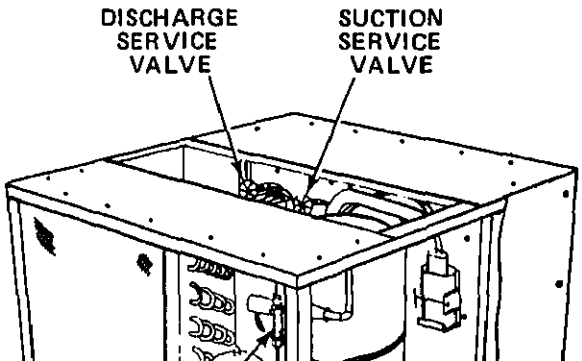
(5) Compare guage readings with the r range of system pressure as shown following table.

(6) Close discharge and discharge valves.

(7) Remove guages and install valve ca

Normal Operating Pressures

	Outdoor Ambient Temperature *120° F/125° F(48.9° C/57.7° C)* *95° F(35° C)*
	At 90° F/75° F(32.2° C/23.9° C)DB return air to unit
uction Pressure	54-64 psi(374-443 kPa)
ischarge Pressure	230-260 psi(1592-1799 kPa)
	At 80° F/67° F(26.7° C/19.4° C)DB return air to unit
uction Pressure	38-49 psi (263-339 kPa)
ischarge Pressure	160-185 psi (1107-1280 kPa)



ST HOUSING

WARNING

Avoid bodily contact with liquid refrigerant and avoid inhaling refrigerant gas. Be especially careful that Refrigerant 12 does not come in contact with eyes. In case of refrigerant leaks, ventilate area immediately.

scharge Refrigerant System

a. Remove valve cap from suction service v
b. Attach suitable hose to suction service v
c. Open suction service valve and disch refrigerant into a suitable container.
d. Close suction service valve, remove hose install valve cap.

CAUTION

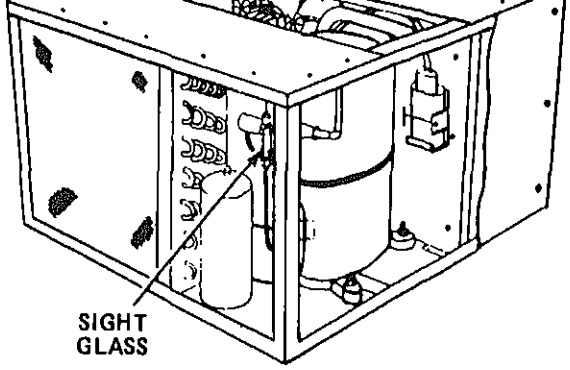
Discharge refrigerant system slowly over a period of two hours to prevent loss of oil.

ehydrator

Refer to paragraph 5-13 and replace dehydrato

rge Refrigerant System

a. Remove valve cap from discharge and suc service valves.
b. Using proper nitrogen regulator conne cylinder of dry nitrogen to suction se valve.
c. Attach suitable hose to discharge ser valve.
d. Open both suction and discharge ser valves.
e. Open valve on nitrogen cylinder and al nitrogen to flow through refrigerant sys until all moisture is forced out. Do not exc 5 psig.
f. Close nitrogen cylinder valve.
g. Close suction and discharge service valves.
h. Remove nitrogen cylinder and discharge h
i. Using bar manifold, connect vacuum pu to center hose. Using proper hoses, con suction service valve to suction pres gage.
j. Turn on vacuum pump, open service va and hold a 29.0 inch Hg vacuum for e (8) hours.



LOCATION/ITEM	REMARKS	ACTION

VICE

OF HOUSING

WARNING

Avoid bodily contact with liquid refrigerant and avoid inhaling refrigerant gas. Be especially careful that Refrigerant 12 does not come in contact with eyes. In case of refrigerant leaks, ventilate area immediately.

NOTE

The following steps *a.* through *l.*, apply only to a completely evacuated system. To add additional refrigerant to a charged system, refer to steps *f.* through *j.*

arging Refrigerant System

a. Remove valve cap from suction discharge valve.

b. Place inverted refrigerant drum on scale and note weight of drum.

c. Loosely connect the charging line of refrigerant drum to suction discharge valve.

charge valve to release trapped pressu

j. Disconnect charging line and install on suction discharge valve.

k. Operate air conditioner in cooling r 15 minutes.

l. Check sight glass for gas bubbles bubbles are present, add additional re (steps *m.* through *v.*).

m. Place the same refrigerant drum on a an upright position on a scale.

n. Remove valve cap from suction servic

o. Loosely connect charging line to service valve:

p. Partially open refrigerant drum v purge air from charging line.

q. Close refrigerant drum valve and tigh nection at suction service valve.

CAUTION

Add refrigerant slowly to avoid slugging at the compressor.

r. With air conditioner operating in th mode, open discharge valve and r drum valve and add approximately ounce per minute of refrigerant. C observe sight glass and when bul appear close suction service vaive.

s. Close refrigerant drum valve.

t. Carefully loosen charging line t trapped pressure.

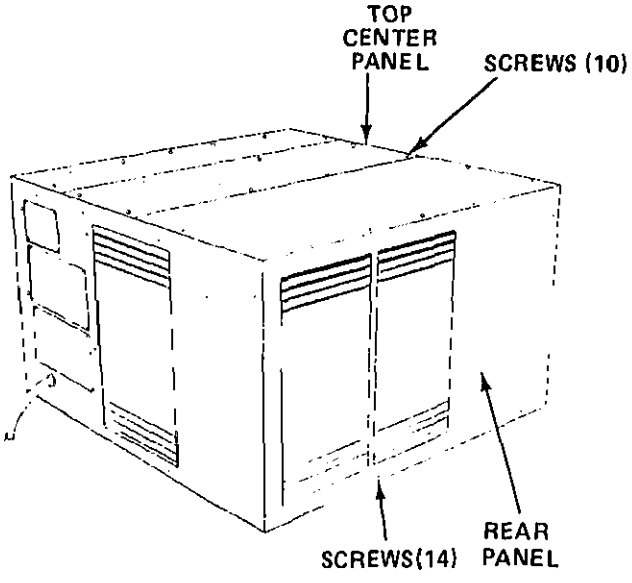
u. Disconnect charging line and install on suction service valve.

9. Rear Panel

a. Align holes in rear panel with ho
housing.
b. Secure rear panel with fourteen (14)

10. Top Center Panel

a. Align holes in top center panel with h
top front panel and top rear panel.
b. Secure top center panel with ten (10)



b. Test
c. Service
e. Installation

INITIAL SETUP

Material/Parts
- Top Center Panel Screws (10)
- Top Rear Panel Screws (9)
- Rear Panel Screws (14)
- Nuts (4)
- Capscrews (4)
- Flat Washers (8)

References
- Paragraph 2-12
- Paragraph 2-14
- Paragraph 5-8
- Paragraph 5-13

Troubleshooting Reference
- COMPRESSOR, Malfunction 1, 5
- AIR CONDITIONER, Malfunctio

Approximate Time Required (in minu

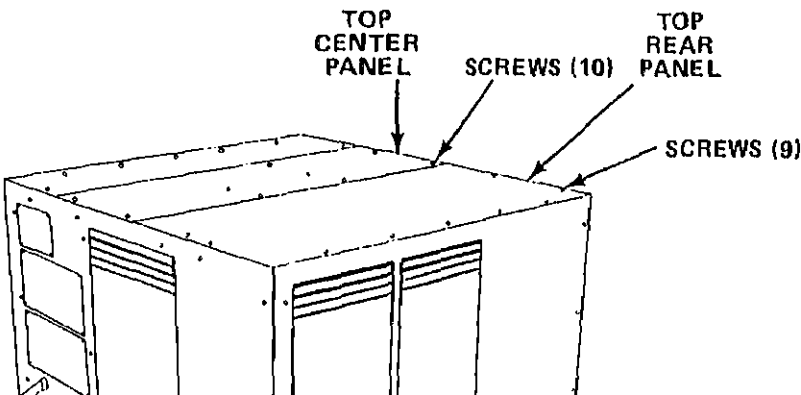
Removal	3
Test	3
Service	72
Repair	6
Installation	3
TOTAL TIME	87

LOCATION/ITEM	REMARKS	ACTION

REMOVAL

1. Top Center Panel

a. Remove ten (10) screws securin panel to top front and top rear p
b. Remove top center panel.

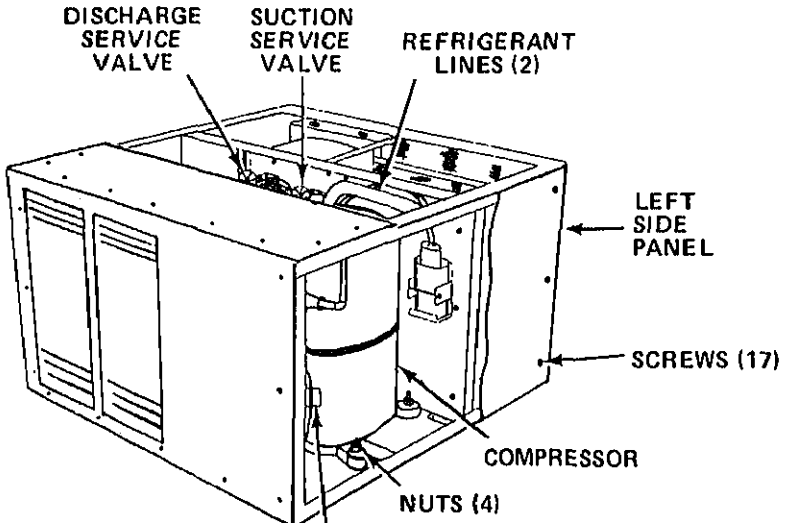


2. Top Rear Panel	*a.* Remove nine (9) screws securin panel to housing. *b.* Remove top rear panel.
3. Rear Panel	*a.* Remove fourteen (14) screws se panel to housing. *b.* Remove rear panel.
LEFT SIDE OF HOUSING	
4. Left Side Panel	*a.* Remove seventeen (17) screws se side panel to housing. *b.* Remove left side panel.

NOTE

Testing of the compressor is to be done while the air conditioner is operating and supplying cooling air.

5. Refrigerant Servicing	Refer to paragraph 5-8 and discharge system.



suction refrigerant line to compressor.

b. Remove suction refrigerant line fro compressor.

c. Unsolder and remove discharge line fro compressor.

d. Remove four (4) nuts, capscrews and eight (flatwashers securing compressor to housir

e. Tag and disconnect electrical leads fro compressor.

f. Remove compressor from housing throu left side.

b. Open suction and discharge service valves.

c. Operate the air conditioner in the cooli mode and verify that the normal operati pressures are as follows:

Normal Operating Pressures

	Outdoor Ambient Temperature *125° F(51.6° C)*	*95° F(35° C)*
	At 90° F(32.2° C)DB or 80° F(26.7° C)WB	
on Pressure	54-64 psi (374-443 kPa)	
arge Pressure	230-260 psi (1592-1799 kPa)	
	At 80° F(26.7° C)DB or 67° F(19° C)WB	
on Pressure		39-49 psi(270-339 kPa)
arge Pressure		160-185 psi (1107-1280 kPa)

d. Stop air conditioner.

e. Close suction and discharge service valves.

f. Remove guages.

g. Operate the air conditioner in the cool mode and using a multimeter, measure insulation resistance of the compres internal motor windings at the start relay a selector switch.

h. Verify that the insulation resistance betw the windings and compressor frame is N less than 60 megohms.

i. Verify that the insulation resistance of main winding (terminal pin A to C) between .6 and .8 ohms.

j. Verify that the insulation resistance of auxiliary winding (terminal pin A to B) between 5 and 7 ohms.

k. If testing indicates that the compressor defective, remove or repair compressor.

compressor.

b. Flush out the entire refrigeratio
follows or repeated burnouts will

(1) Refer to paragraph 5-8 a
refrigerant system.

(2) Purge refrigerant system
nitrogen (paragraph 5-8).

(3) Remove defective compress

(4) With compressor remo
refrigerant system with
(paragraph 5-8).

(5) Install new compressor.

(6) Install new dehydrator (par

(7) Discharge refrigerant syste
times (paragraph 5-8).

(8) Start and operate air co
twenty-four (24) hours (par

(9) Stop air conditioner (paragr

(10) Discharge refrigerant syste
with dry nitrogen (paragrap

(11) Remove dehydrator and
one (paragraph 5-13).

(12) Discharge refrigerant s
recharge with refrigerant
5-8).

(13) Operate air conditioner.

Compressor

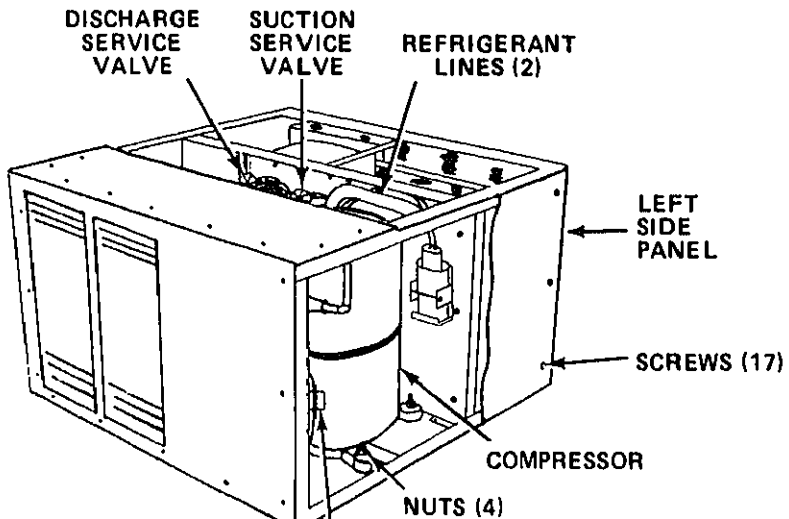
a. Tighten loose connections.
b. Repair damaged wiring by rem
insulation to expose 1/2 inch of bare wi
each side of break.
c. Twist the wire ends together and solde
splice.
d. Cover the splice with PVC electrical
making certain to cover all repaired areas

ISTALLATION

OP AND LEFT SIDE OF HOUSING

. Compressor

a. Install compressor through left sid
housing.
b. Align holes in compressor mounting feet
holes in housing.
c. Secure compressor with eight (8) flatwa
four (4) capscrews and four (4) nuts.
d. Install two (2) refrigerant lines on compr
and tighten flare nut on suction refrig
line.
e. Refer to paragraph 5-8 and solder disc
refrigerant line.



AND REAR OF HOUSING

ear Panel

a. Align holes in rear panel with ho housing.
b. Secure rear panel with fourteen (14) s

op Rear Panel

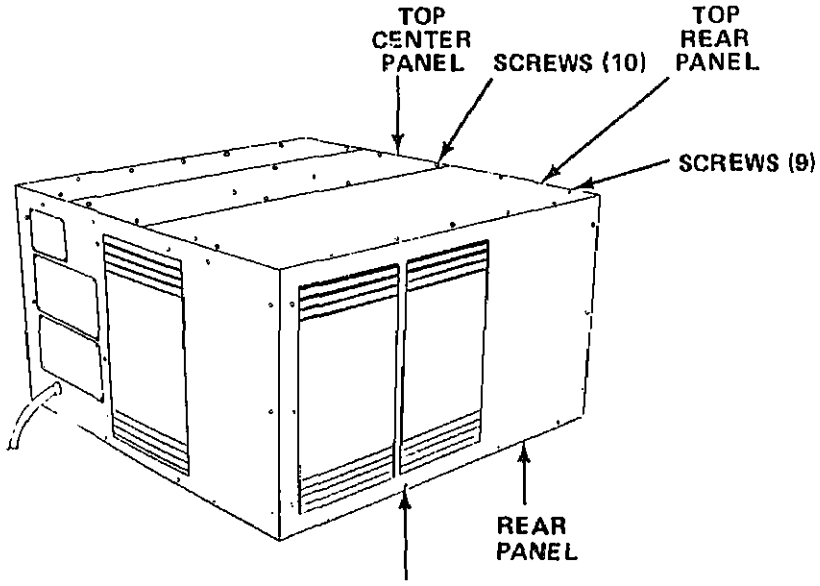
a. Align holes in top rear panel with h housing.
b. Secure top rear panel with nine (9) scre

efrigerant System

Refer to paragraph 5-8 and charge refri system. Refer to burnout procedure if a bu has been detected.

op Center Panel

a. Align holes in top center panel with h top rear panel and top front panel.
b. Secure top center panel with ten (10) s



b. Test

d. Installation

INITIAL SETUP

Material/Parts

Top Center Panel Screws (10)
Top Front Panel Screws (7)
Top Rear Panel Screws (9)
Right Side Panel Screws (17)
Rear Panel Screws (14)
Left Side Panel Screws (17)
Return Air Grill Screws (8)
Air Diffuser Grill Screws (8)
Control Panel Plate Screws (2)
Front Panel Screws (14)

References

Paragraph 5-8

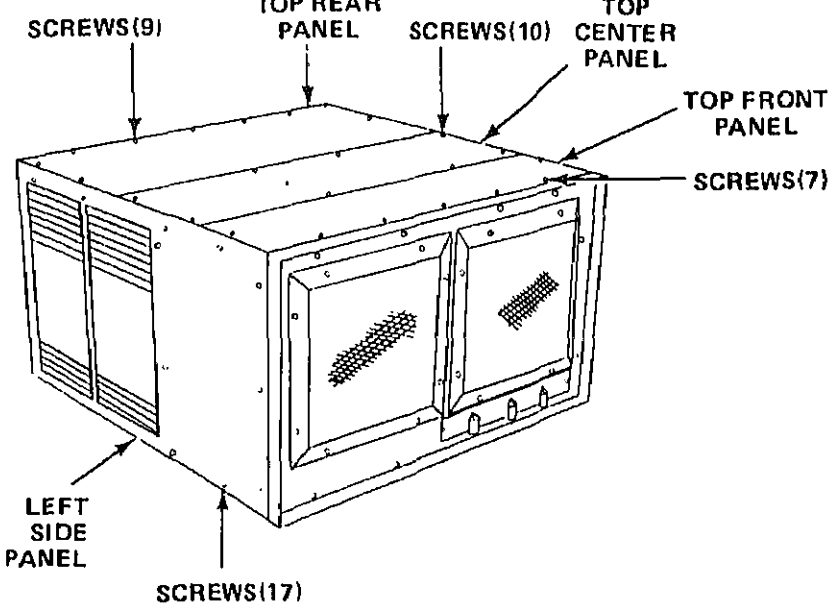
Troubleshooting Reference

AIR CONDITIONER, Malfunction 5, S

Approximate Time Required (in minutes)

Removal	20
Testing and Repair	30
Installation	750
TOTAL TIME	800

LOCATION/ITEM	REMARKS	ACTION
REMOVAL		
TOP AND LEFT SIDE OF HOUSING		
1. Top Center Panel		*a.* Remove ten screws securing top center *b.* Remove top center panel.
2. Top Front Panel		*a.* Remove seven (7) screws securing top panel. *b.* Remove top front panel.
3. Top Rear Panel		*a.* Remove nine (9) screws securing to panel. *b.* Remove top rear panel.
4. Left Side Panel		*a.* Remove seventeen (17) screws securi side panel. *b.* Remove left side panel.


SCREWS(9)
TOP REAR PANEL
SCREWS(10)
TOP CENTER PANEL
TOP FRONT PANEL
SCREWS(7)
LEFT SIDE PANEL
SCREWS(17)

RIGHT SIDE AND REAR OF HOUSING

5. Right Side Panel

a. Remove seventeen (17) screws side panel.
b. Remove right side panel.

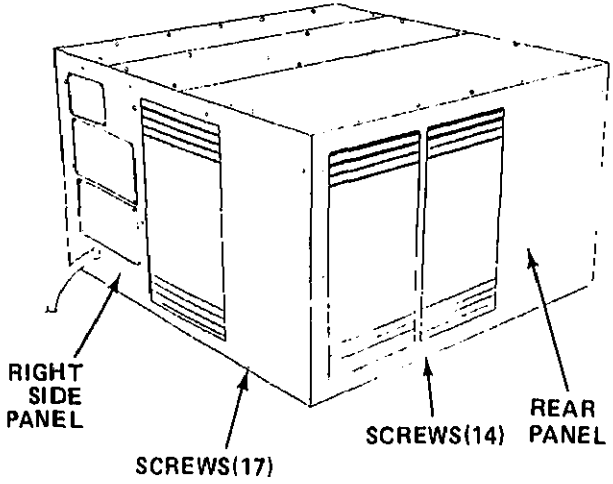
6. Rear Panel

a. Remove fourteen (14) screws panel.
b. Remove rear panel.

FRONT OF HOUSING

7. Control Panel Plate

a. Loosen setscrews and remove fresh air control, selector thermostat switch.
b. Remove two (2) screws securing plate.
c. Remove control panel plate.



ONT OF HOUSING

Return Air Grill

a. Loosen mechanical screw post at do remove wire.
b. Loosen clamp on evaporator shrou remove wire.
c. Remove eight (8) screws securing re grill.
d. Remove return air grill.

Air Diffuser Grill

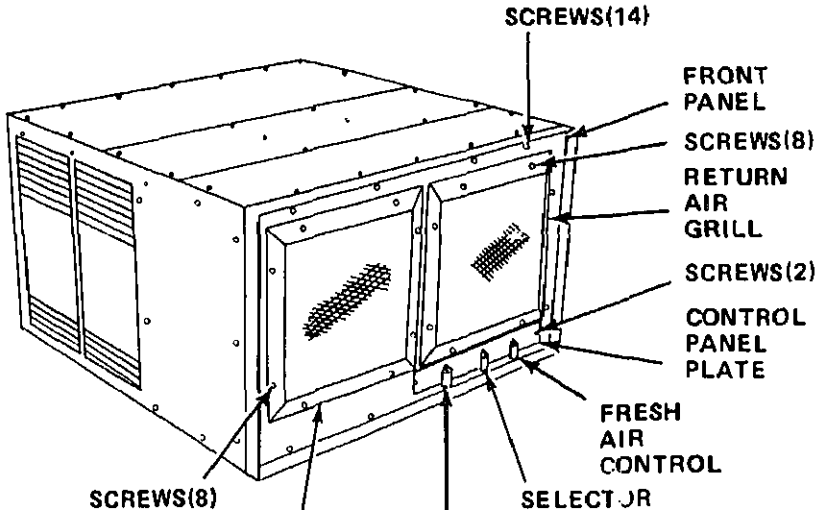
a. Remove eight (8) screws securing air grill.
b. Remove air diffuser grill.

Front Panel

a. Remove two (2) screws securing the switch to front panel.
b. Remove fourteen (14) screws securin panel.
c. Remove front panel.

Refrigerant System

Refer to paragraph 5-8 and discharge ref system.



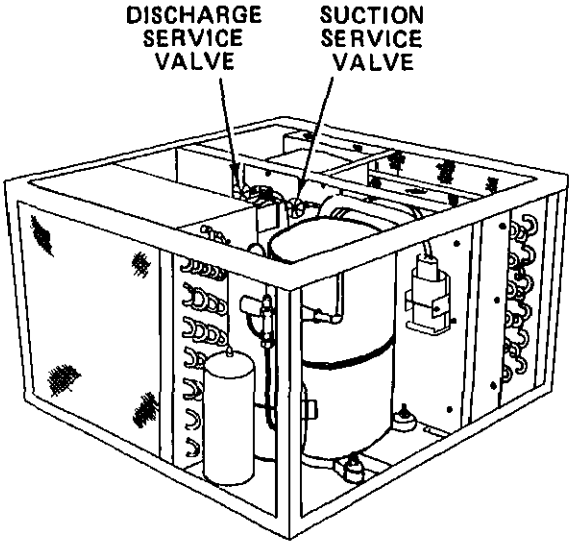
NTERIOR OF HOUSING

2. Service Valves

a. Unscrew and remove flare nuts from
and discharge service valves.
b. Remove refrigerant lines from sucti
discharge service valves.
c. Remove two (2) screws from each
valve.
d. Remove suction and discharge service

3. Refrigerant Piping

a. Unsolder and remove tubing only
necessary to remove a defective part.
b. When soldering, constantly purg
refrigerant system with dry nitro
prevent scale formation within the refr
system (paragraph 5-8).



splits.

b. Inspect all fittings for leaks.

Valves

a. Visually inspect all valves for signs of da

b. Inspect valve fittings for leaks.

STING AND REPAIR

WARNING

Avoid bodily contact with liquid refrigerant and avoid inhaling refrigerant gas. Be especially careful that refrigerant does not come in contact with eyes. In case of refrigerant leaks, ventilate area immediately.

Refrigerant Piping

a. Check all piping and connections v General Electrical Type H-2 Halogen Detector (or approved equal).

b. Calibrate the detector with a General E LS-20 leak standard (or approved equal pure refrigerant leak rate of 0.1 oun year.

c. Replace any piping or connection t leaking.

TALLATION

Refrigerant Piping

a. Solder all copper-to-copper joints with solder type 3, 4 or 6A per specifi QQ-S-561.

b. Solder all copper-to-brass or copper-t with type 4 or 6A per specification QQ-

c. Solder melting point is 1160° F (625° C)

d. Make all solder joints with an atmosph inert gas to prevent internal oxidation.

Service Valves

a. Connect suction and discharge service to refrigerant piping.

b. Tighten flare nuts at suction and dis service valves.

c. Secure suction and discharge service va bulkhead with four (4) screws.

ONT OF HOUSING

Front Panel

a. Align holes in thermostat switch with h front panel.

ONT OF HOUSING

Air Diffuser Grill

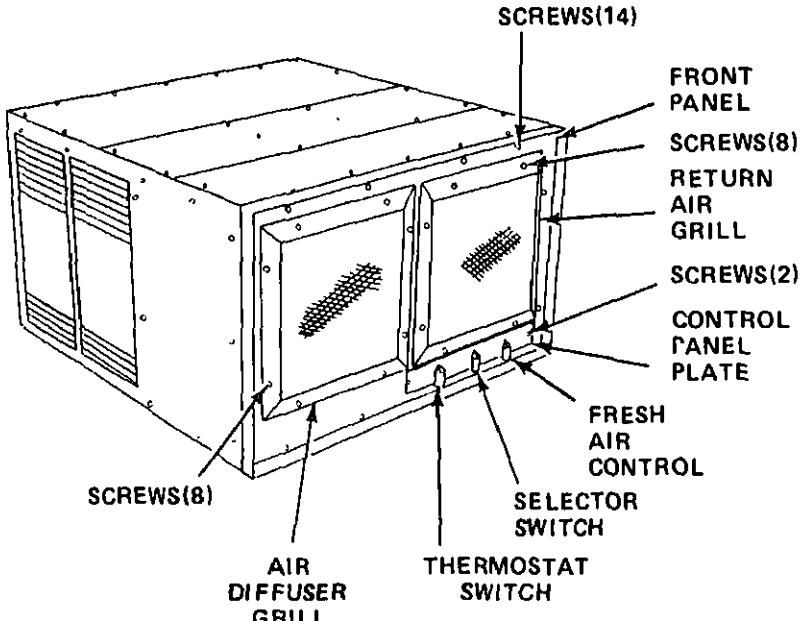
a. Align holes in air diffuser grill with hol
front panel.
b. Secure air diffuser grill with eight (8) scr

Return Air Grill

a. Align holes in return air grill with hol
front panel.
b. Secure return air grill with eight (8) screw
c. Install wire through clamp on evapor
shroud and tighten clamp.
d. Install wire in mechanical screw post on
and tighten mechanical screw post.

Control Panel Plate

a. Align holes in control panel plate with
in front panel.
b. Secure control panel plate with two
screws.
c. Install three (3) knobs.



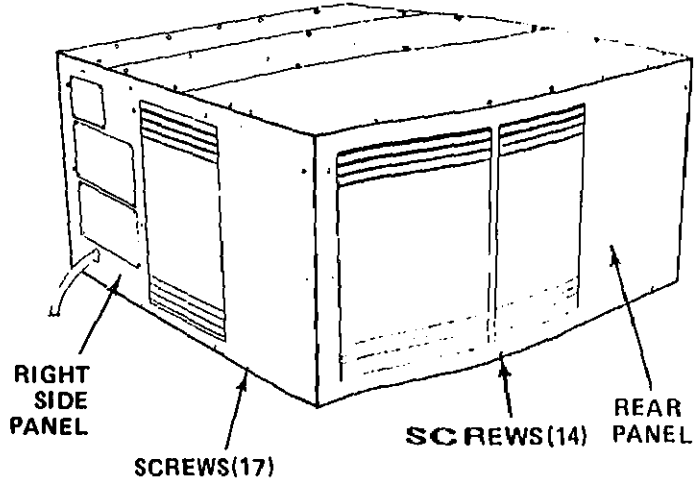
SIDE AND REAR OF HOUSING

r Panel

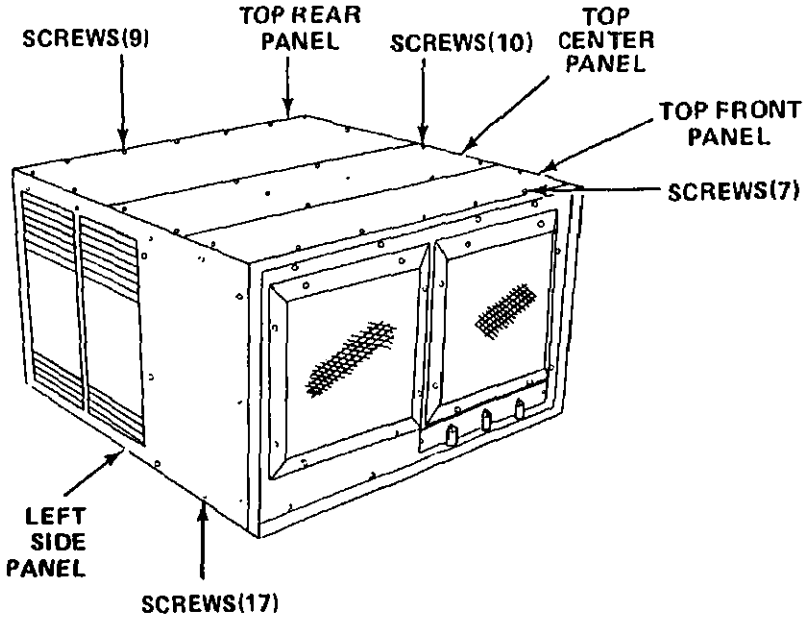
a. Align holes in rear panel with h
housing.
b. Secure rear panel with fourteen (14)

ht Side Panel

a. Align holes in right side panel with h
housing.
b. Secure right side panel with seventee
screws.



	housing. *b.* Secure left side panel with screws.
26. Top Rear Panel	*a.* Align holes in top rear pane housing. *b.* Secure top rear panel with nin
27. Top Front Panel	*a.* Align holes in top front pane housing. *b.* Secure top front panel with s
28. Refrigerant Servicing	Refer to paragraph 5-8 and ch system.
29. Top Center Panel	*a.* Align holes in top center pan top front and top rear panels. *b.* Secure top center panel with


SCREWS(9)
TOP REAR PANEL
SCREWS(10)
TOP CENTER PANEL
TOP FRONT PANEL
SCREWS(7)
LEFT SIDE PANEL
SCREWS(17)

Material/Parts
- Top Center Panel Screws (10)
- Top Front Panel Screws (7)
- Top Rear Panel Screws (9)
- Right Side Panel Screws (17)
- Rear Panel Screws (14)
- Left Side Panel Screws (17)
- Thermostat Switch Screws (2)
- Selector Switch Screws (2)
- Control Panel Plate Screws (2)
- Front Panel Screws (14)
- Condenser Shroud Screws (2)
- Frame Screws (8)
- Evaporator Coil Screws (6)
- Evaporator Coil Screws (4)

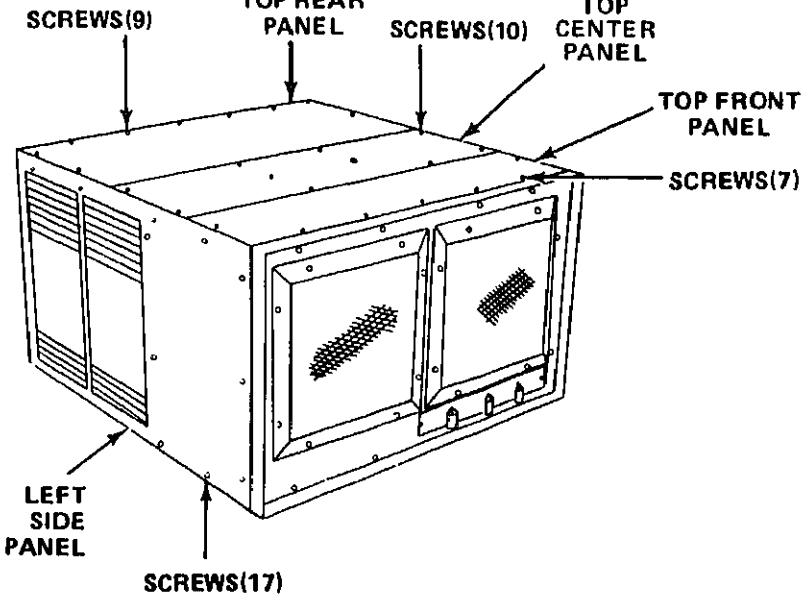
References
- Paragraph 5-8

Troubleshooting Reference
- None

Approximate Time Required (in minutes)

Removal	30
Test	20
Repair	20
Installation	720
TOTAL TIME	790

LOCATION/ITEM	REMARKS	ACTION
EMOVAL		
OP AND LEFT SIDE OF HOUSING		
. Top Center Panel		*a.* Remove ten (10) screws securing top panel. *b.* Remove top center panel.
. Top Front Panel		*a.* Remove seven (7) screws securing to panel. *b.* Remove top front panel.
. Top Rear Panel		*a.* Remove nine (9) screws securing t panel. *b.* Remove top rear panel.
. Left Side Panel		*a.* Remove seventeen (17) screws secu side panel. *b.* Remove left side panel.


SCREWS(9)
TOP REAR PANEL
SCREWS(10)
TOP CENTER PANEL
TOP FRONT PANEL
SCREWS(7)
LEFT SIDE PANEL
SCREWS(17)

EMOVAL

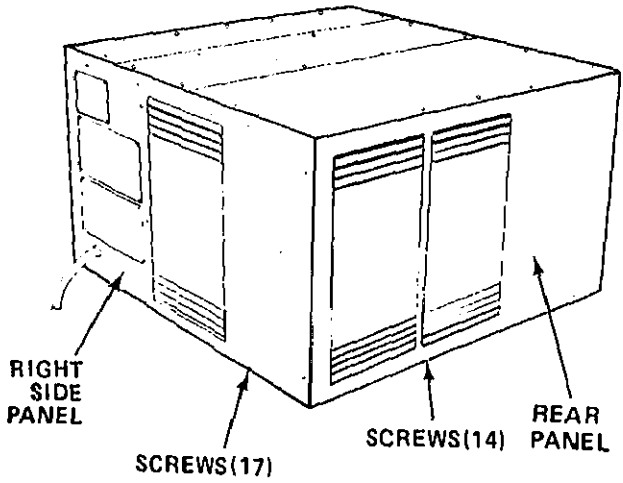
IGHT SIDE AND REAR OF HOUSING

Right Side Panel

a. Remove seventeen (17) screws securing side panel.
b. Remove right side panel.

Rear Panel

a. Remove fourteen (14) screws securing panel.
b. Remove rear panel.



FRONT OF HOUSING

7. Control Panel Plate

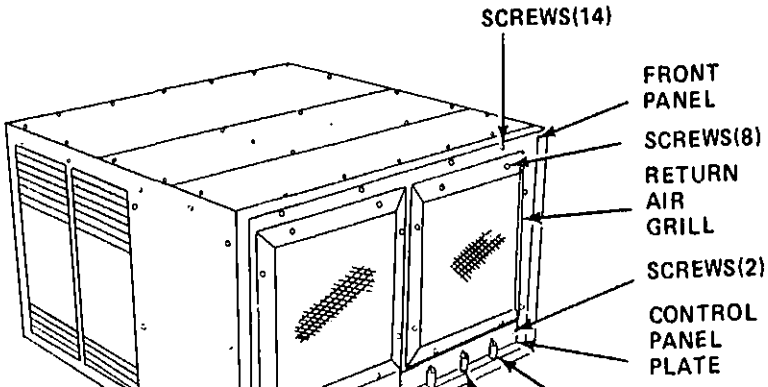
a. Loosen setscrews and remove knobs fresh air control, selector switch thermostat switch.
b. Remove two (2) screws securing control plate.
c. Remove control panel plate.

8. Front Panel

a. Loosen mechanical screw post at door remove wire.
b. Loosen clamp on evaporator shroud remove wire.
c. Remove two (2) screws securing therm switch to front panel.
d. Remove two (2) screws securing sel switch to front panel.
e. Remove fourteen (14) screws securing panel.
f. Remove front panel.

NOTE

Test evaporator coil for leaks prior to discharging refrigerant system and removing evaporator coil.



b. Remove screw on top of frame sec
suction line clamp.

c. Remove eight (8) screws securing fram
base.

d. Remove frame from base.

e. Remove air filter.

f. Unsolder suction line approximately tw
inches below header and remove suction
from evaporator coil.

g. Unscrew and remove flare nut bet
expansion valve and evaporator coil.

h. Remove six (6) screws securing evapo
coil to bulkhead.

i. Remove four (4) screws from undersi
base that secure evaporator coil to base.

j. Remove evaporator coil.

ESTING

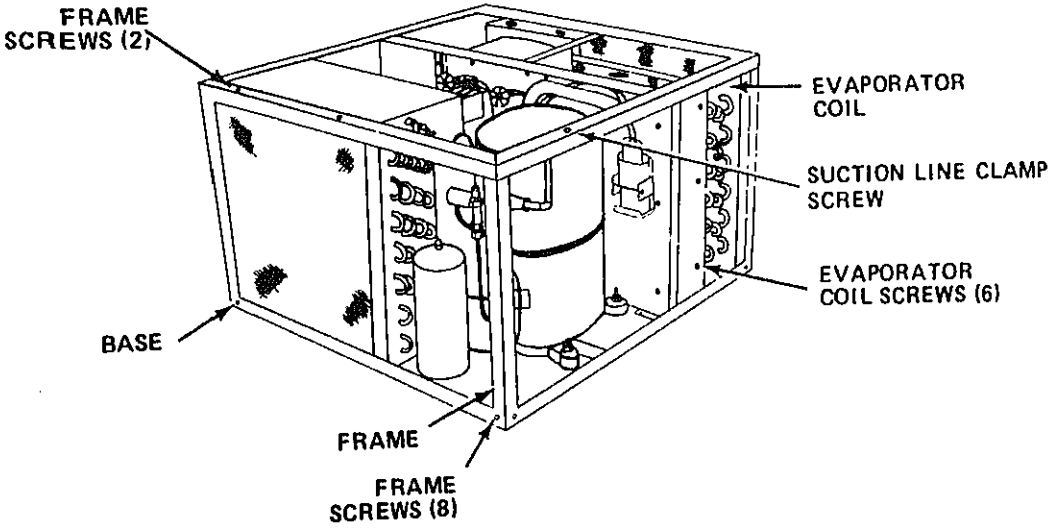
. Evaporator Coil

a. Check all evaporator coil tubing and
fittings with a General Electric Type
Halogen Test Detector (or approved equa

b. Calibrate the detector with a General El
LS-20 leak standard (or approved equal)
pure refrigerant leak rate of 0.1 ounc
year.

c. Mark all spots where leaks are noticed.

d. Repair leaks or replace evaporator coil.


FRAME
SCREWS (2)
EVAPORATOR
COIL
SUCTION LINE CLAMP
SCREW
EVAPORATOR
COIL SCREWS (6)
BASE
FRAME
FRAME
SCREWS (8)

PAIR

Evaporator Coil

a. Repair minor leaks or holes by soldering
b. Use a silver solder with a 50% silver ca and a melting point of approximately 1 (634.8°C).
c. Straighten bent fins prior to installation

TALLATION

USING INTERIOR

Evaporator Coil

a. Align holes in evaporator coil with h base.
b. Secure evaporator coil to base fro *underside using four (4) screws.*
c. Secure evaporator coil to bulkhead w (6) screws.
d. Connect and solder two (2) refrigeran *to evaporator coil.*
e. Align holes in frame with holes in base.
f. Secure frame to base with eight (8) scre
g. Secure frame to condenser coil with t screws.
h. Connect suction line to evaporato approximately two (2) inches below h
i. Refer to paragraph 5-8 and solder s line.
j. Connect refrigerant line between evap coil and expansion valve and tighten fla

STALLATION

ONT OF HOUSING

Front Panel

a. Align holes in thermostat switch with h front panel.
b. Secure thermostat switch to front pan two (2) screws.
c. Align holes in selector switch with h *front panel.*
d. Secure selector switch to front panel w (2) screws.
e. Align holes in front panel with h

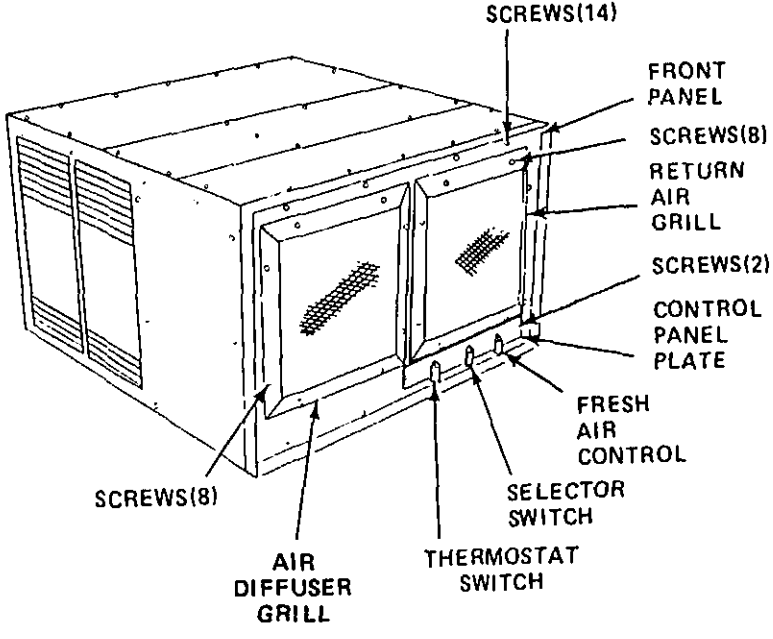
LOCATION/ITEM	REMARKS	ACTION

NSTALLATION

FRONT OF HOUSING

4. Control Panel Plate

a. Align holes in control panel plate with in front panel.
b. Secure control panel plate with tw screws.
c. Install three (3) knobs.



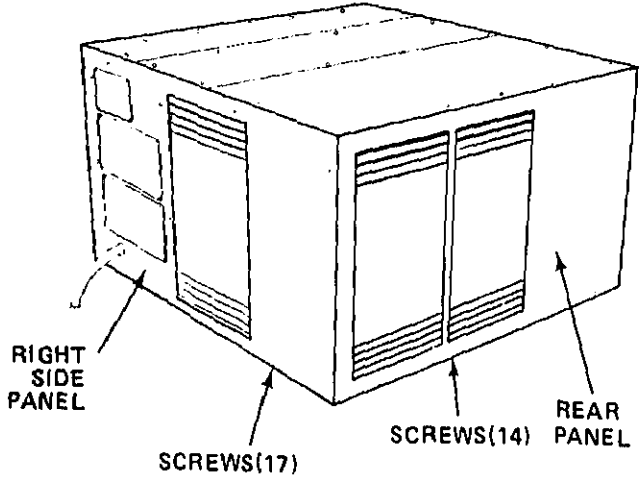
RIGHT SIDE AND REAR OF HOUSING

15. Rear Panel

a. Align holes in rear panel with housing.
b. Secure rear panel with fourteen (14

16. Right Side Panel

a. Align holes in right side panel with housing.
b. Secure right side panel with seventeen screws.



TOP AND LEFT SIDE OF HOUSING

17. Left Side Panel

a. Align holes in left side panel with housing.
b. Secure left side panel with seven screws.

18. Top Rear Panel

a. Align holes in top rear panel with housing.
b. Secure top rear panel with nine (9) s

19. Top Front Panel

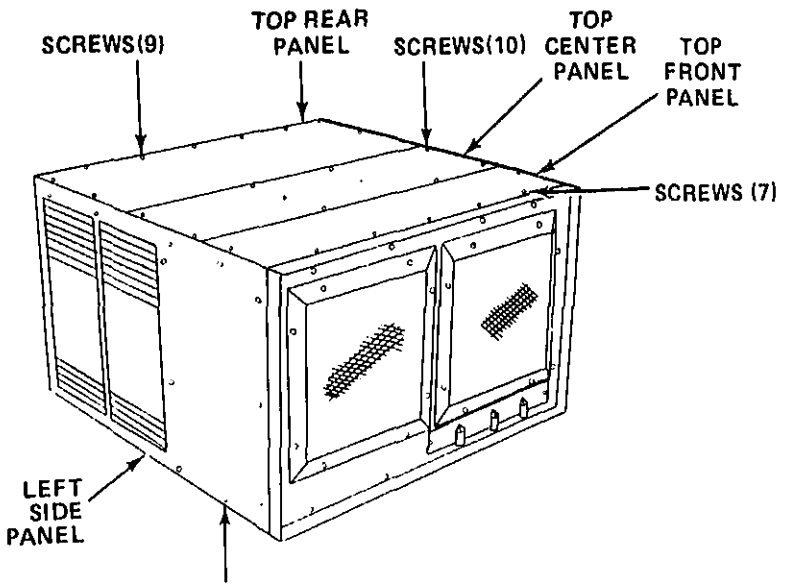
a. Align holes in top front panel with housing.
b. Secure top front panel with seven (

20. Refrigerant Servicing

Refer to paragraph 5-8 and charge r system.

21. Top Center Panel

a. Align holes in top center panel wit top front and top rear panels.
b. Secure top center panel with ten (1



a. Removal
b. Test
c. Repair
d. Installation

INITIAL SETUP

Material/Parts
- Top Center Panel Screws (10)
- Top Rear Panel Screws (9)
- Left Side Panel Screws (17)
- Rear Panel Screws (14)
- Condenser Shroud Screws (2)
- Condenser Shroud Screws (6)
- Condenser Coil Screws (4)

References
- Paragraph 5-8

Troubleshooting Reference
- None

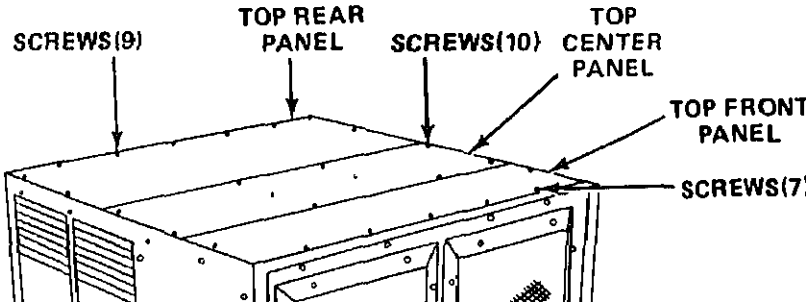
Approximate Time Required (in min
- Removal
- Test
- Repair
- Installation
- TOTAL TIME

LOCATION/ITEM	REMARKS	ACTION

REMOVAL

TOP AND LEFT SIDE OF HOUSING

1. Top Center Panel		*a.* Remove ten (10) screws secu panel. *b.* Remove top center panel.
2. Top Rear Panel		*a.* Remove nine (9) screws sec panel. *b.* Remove top rear panel.
3. Left Side Panel		*a.* Remove seventeen (17) screw side panel. *b.* Remove left side panel.



OF HOUSING

Panel

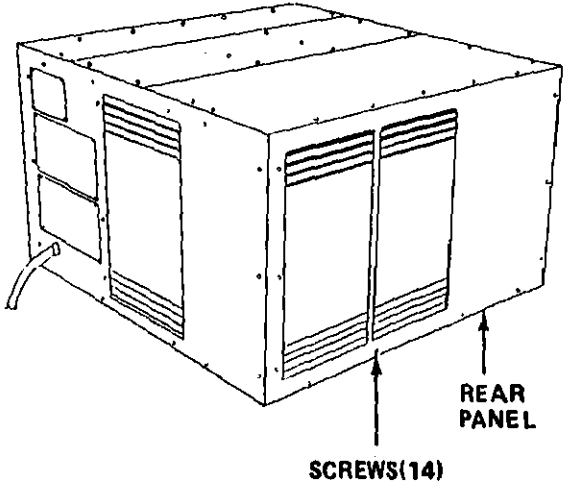
a. Remove fourteen (14) screws securing rea panel.
b. Remove rear panel.

NOTE

Test condenser coil for leaks prior to discharging refrigerant system and removing condenser coil.

gerant System

Refer to *paragraph* 5-8 and discharge refrigeran system.



ISING INTERIOR

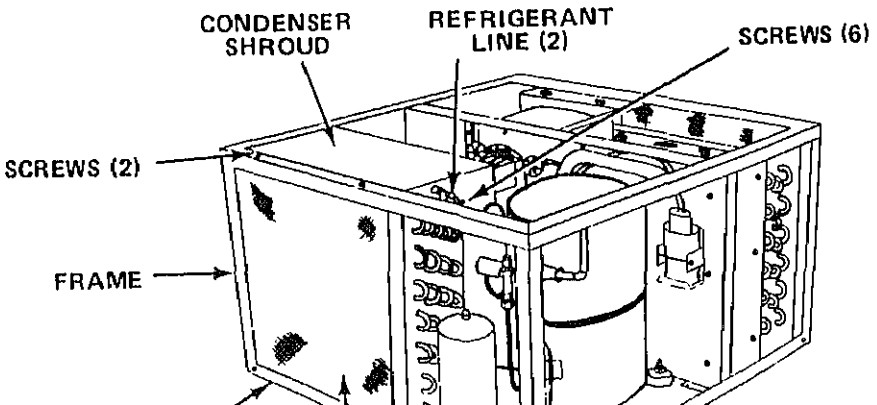
ondenser Coil

a. Loosen setscrew in hub of condenser slide condenser fan towards bulkhead.
b. Remove two (2) screws securing f condenser shroud.
c. Remove six (6) screws securing co shroud to condenser coil.
d. Slide condenser shroud back bulkhead.
e. Unsolder and remove two (2) refriger from condenser coil.
f. Remove four (4) screws from unde base that secures condenser coil to bas
g. Remove condenser coil.

STING

Condenser Coil

a. Check all condenser coil tubing an fittings with a General Electric T Halogen Test Detector (or approved e
b. Calibrate the detector with a General LS-20 leak standard (or approved equ pure refrigerant leak rate of 0.1 o year.
c. Mark all spots where leaks are noticed
d. Repair leaks or replace condenser coil



Condenser Coil

a. Repair minor leaks or holes by soldering.
b. Use a silver solder with a 50% silver cap
and a melting point of approximately 11
(634.8° C).
c. Straighten bent fins prior to installation.

WARNING

Purge system with dry nitrogen prior to soldering. Refrigerant heated to 1200° F creates phosgene gas.

NSTALLATION

. Condenser Coil

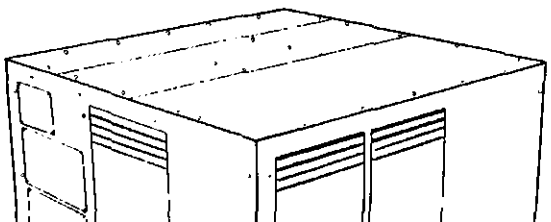
a. Align holes in condenser coil with hol
base.
b. Secure condenser coil to base from
underside with four (4) screws.
c. Align holes in condenser shroud with ho
condenser coil.
d. Secure condenser shroud with six (6) sc
e. Secure condenser shroud to frame with
(2) screws.
f. Reposition condenser fan on motor
until hub is flush with end of shaft
tighten setscrew in hub.
g. Refer to paragraph 5-8 and solder tw
refrigerant lines to condenser coil.

NSTALLATION

REAR OF HOUSING

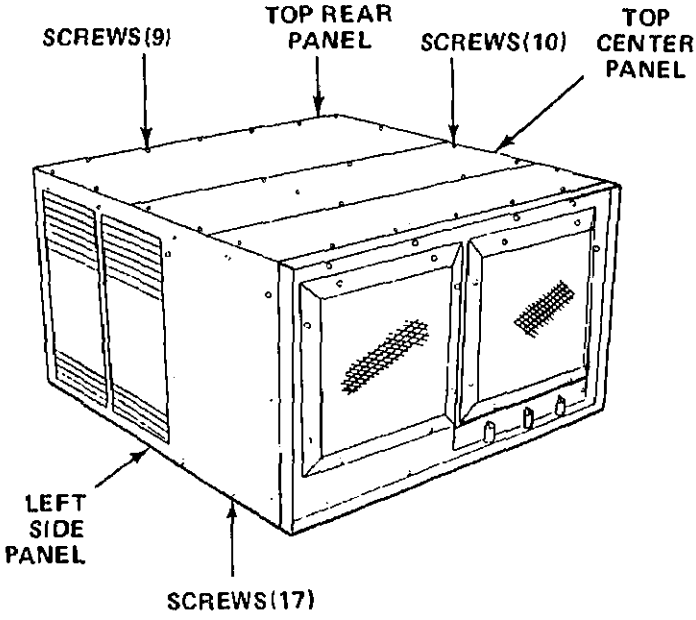
0. Rear Panel

a. Align holes in rear panel with hol
housing.
b. Secure rear panel with fourteen (14) sc



P AND LEFT SIDE OF HOUSING

Left Side Panel	a. Align holes in left side panel with h housing. b. Secure left side panel with seventee screws.
Top Rear Panel	a. Align holes in top rear panel with h housing. b. Secure top rear panel with nine (9) scr
Refrigerant Servicing	Refer to paragraph 5-8 and charge ref system.
Top Center Panel	a. Align holes in top center panel with top front and top rear panels. b. Secure top center panel with ten (10)



a. Removal *b.* Installation

INITIAL SETUP

Material/Parts
Right Side Panel Screws (17)
Return Air Grill Screws (8)

References
Paragraph 5-8

Troubleshooting Reference
AIR CONDITIONER, Malfunction 3, S
AIR CONDITIONER, Malfunction 4, S

Approximate Time Required (in minutes)

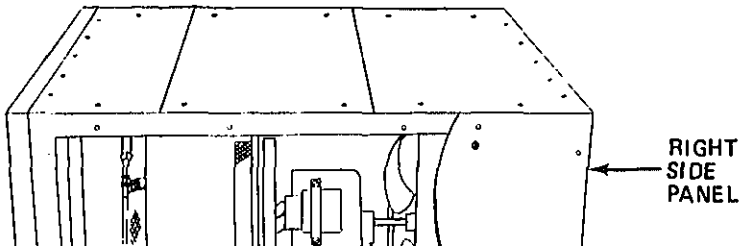
Removal	10
Installation	740
TOTAL TIME	750

LOCATION/ITEM	REMARKS	ACTION

REMOVAL

RIGHT SIDE OF HOUSING

1. Right Side Panel
   - *a.* Remove seventeen (17) screws securin side panel to housing.
   - *b.* Remove right side panel.
2. Return Air Grill
   - *a.* Loosen setscrew and remove fresh air knob.
   - *b.* Remove eight (8) screws securing ret grill to front panel.
   - *c.* Partially remove return air grill.
3. Refrigerant System — Refer to paragraph 5-8 and discharge refr system.



	(2) refrigerant lines from dehydrator. *b.* Remove dehydrator from air conditione
TALLATION	
Dehydrator	*a.* Connect dehydrator to two (2) refr lines. *b.* Tighten two (2) flare nuts at dehydrato
Right Side Panel	*a.* Align holes in right side panel with h housing. *b.* Secure right side panel with seventee screws.
Return Air Grill	*a.* Align holes in return air grill with h front panel. *b.* Secure return air grill with eight (8) scr *c.* Install knob on fresh air control and setscrew.
Refrigerant Servicing	Refer to paragraph 5-8 and charge refr system.

a. Removal *b.* Installation

INITIAL SETUP

Material/Parts
Rear Panel Screws (14)

References
Paragraph 5-8

Troubleshooting Reference
None

Approximate Time Required (in minutes)

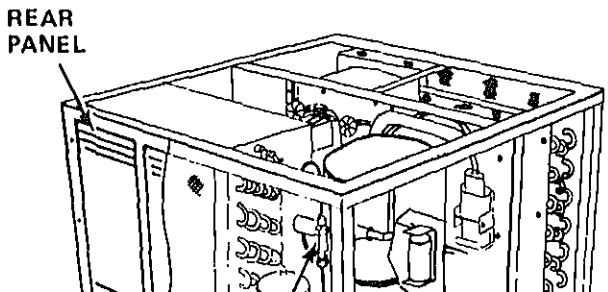
Removal	10
Installation	740
TOTAL TIME	750

LOCATION/ITEM	REMARKS	ACTION

REMOVAL

REAR OF HOUSING

1. Rear Panel
   - *a.* Remove fourteen (14) screws secu panel to housing.
   - *b.* Remove rear panel.
2. Refrigerant System — Refer to paragraph 5-8 and discharge re system.
3. Sight Glass
   - *a.* Unscrew two (2) flare nuts and rem (2) refrigerant lines from sight glass.
   - *b.* Remove sight glass from air condition



4. Sight Glass	a. Connect sight glass to two (2) re lines. b. Tighten two (2) flare nuts at sight gla
5. Rear Panel	a. Align holes in rear panel with housing. b. Secure rear panel with fourteen (14
6. Refrigerant System	Refer to paragraph 5-8 and charge re system.

This task covers:

a. Removal
b. Test
c. Installation

INITIAL SETUP

Material/Parts
- Top Center Panel Screws (10)
- Top Front Panel Screws (7)
- Right Side Panel Screws (17)
- Insulation Tape

References
- Paragraph 5-8

Troubleshooting Reference
- AIR CONDITIONER, Malfunction 3, 9
- AIR CONDITIONER, Malfunction 4, 9
- AIR CONDITIONER, Malfunction 5, 9

Approximate Time Required (in minutes)

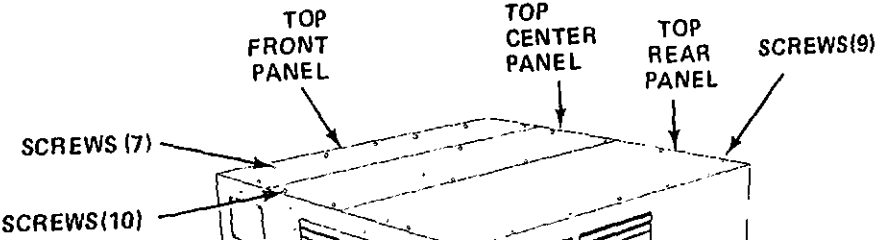
Removal	10
Test	10
Installation	730
TOTAL TIME	750

LOCATION/ITEM	REMARKS	ACTION

REMOVAL

TOP AND RIGHT SIDE OF HOUSING

1. Top Center Panel
   - a. Remove ten (10) screws securing top panel.
   - b. Remove top center panel.
2. Top Front Panel
   - a. Remove seven (7) screws securing to panel.
   - b. Remove top front panel.
3. Right Side Panel
   - a. Remove seventeen (17) screws securi side panel.
   - b. Remove right side panel.



Return Air Grill	*a.* Loosen retaining screw and remove from air co knob. *b.* Remove eight (8) screws securing retur grill to front panel. *c.* Partially remove return air grill.

NOTE

Testing of expansion valve is to be done while the air conditioner is operating and supplying cooling air.

Refrigerant System	*Refer to paragraph 5-8 and discharge refrig* system.

CAUTION

Carefully unwrap thermostat switch sensing bulb from expansion valve sensing line. Use care to prevent damage to sensing bulb.

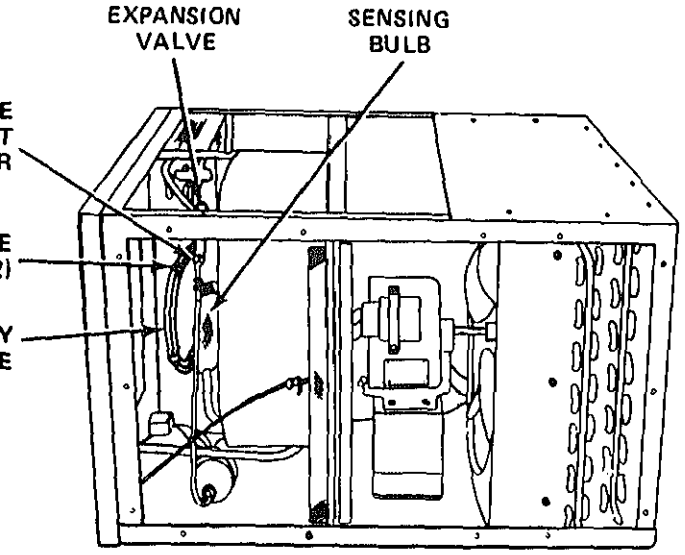
Expansion Valve	*a.* Unwrap insulation tape from sensing bulb *b.* Mark location and remove two (2) straps securing sensing bulb. *c.* Carefully unwrap thermostat switch se *bulb from expansion valve sensing line.* *d.* Unscrew and remove two (2) flare nuts remove refrigerant lines from expansion *e.* Remove expansion valve.

TESTING

Expansion Valve	*a.* Using a General Electric Type H-2 Ha Test Detector (or approved equal), expansion valve for leaks. *b.* Calibrate the detector with a General El LS-20 leak standard (or approved equal) *pure refrigerant leak rate of 0.1 ounc* year. *c.* Verify that there is NO leakage or damag *d.* Replace expansion valve if testing ind that it is defective.

INSTALLATION

Expansion Valve	*a.* Connect expansion valve to refrigerant *b.* Tighten two (2) flare nuts. *c.* Secure sensing bulb to refrigerant line two (2) metal straps.



TEM	REMARKS	ACTION
IDE OF HOUSING		
		a. Align holes in return air grill with holes in front panel. b. Secure return air grill to front panel with eight (8) screws.
		a. Align holes in right side panel with holes in housing. b. Secure right side panel with seventeen (17)

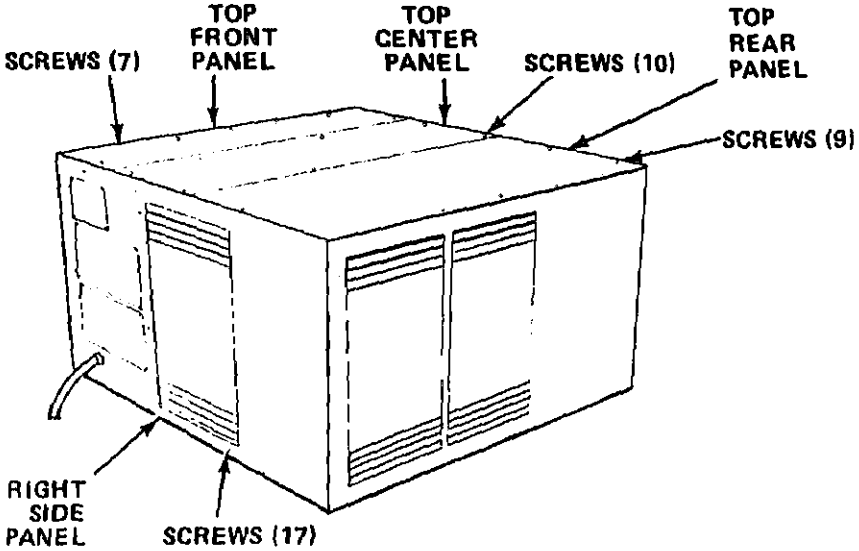
TOP AND RIGHT SIDE OF HOUSING

12. Refrigerant Servicing

Refer to paragraph 5-8 and charge system.

13. Top Center Panel

a. Align holes in top center panel w top front and top rear panels.
b. Secure top center panel with ten



TB 5-4200-200-10	Hand Portable Fire Extinguishers Approved for Army Users

. LUBRICATION

C91001L	Fuels, Lubricants, Oil and Waxes

. PAINTING

TM-43-0139	Painting Instructions for Field Use

. MAINTENANCE

TM 38-750	The Army Maintenance Management System (TAMMS)
TM 5-4120-341-23P	Organizational and Direct Support Maintenance Repair Parts and Spec Tools List

. CLEANING

Fed Spec P-S-661	Dry Cleaning Solvent
Fed Spec P-D-680	Dry Cleaning Solvent

. DESTRUCTION

TM 750-244-3	Procedures for Destruction of Equipment to Prevent Enemy Use

. SHIPMENT AND STORAGE

TM 740-90-1	Administrative Storage of Equipment

. RADIO SUPPRESSION

FM 11-65	Radio Interference Suppression

COMPONENTS OF END ITEMS LIST

Section I. INTRODUCTION

1. SCOPE

is appendix lists Integral Components of and Basic Issue Items (BII) for the air conditioner to help
ventory items required for safe and efficient operation.

2. GENERAL

e components of end item list are divided into the following sections:

a. Section II. Integral Components of the End Item. These items, when assembled, comprise the
nditioner and must accompany it whenever it is transferred or turned in. These illustrations will help
entify these items.

b. Section III. Basic Issue Items. These are minimum essential items required to place the
nditioner in operation, to operate it and to perform emergency repairs. Although shipped separa
cked, they must accompany the air conditioner during operation and whenever it is transferred betw
countable officers. The illustrations will assist you with hard-to-identify items. This manual is
thority to requisition replacement BII based on Table(s) of Organization and Equipn
OE)/Modification Table of Organization and Equipment (MTOE) authorization of the end item.

3. EXPLANATION OF COLUMNS

a. Illustration. This column is divided as follows:

(1) Figure Number. Indicates the figure number of the illustration on which the item is show
plicable).

(2) Item Number. The number used to identify item called out in the illustration.

b. National Stock Number (NSN). Indicates the national stock number assigned to the end item w
ill be used for requisitioning.

c. Part Number (P/N). Indicates the primary number used by the manufacturer which controls
esign and characteristics of the item by means of its engineering drawings, specifications, standards
spection requirements to identify an item or range of items.

d. Description. Indicates the federal item name and, if required, a minimum description to identify
em.

e. Location. The physical location of each item listed is given in this column. The lists are designe
ventory all items in one area of the major item before moving on to an adjacent area.

Section I. INTRODUCTION

. GENERAL

a. This section provides a general explanation of all maintenance and repair functions authorized ious maintenance levels.

b. Section II designates overall responsibility for the performance of maintenance functions on ntified end item or component and the work measurement time required to perform the functions designated maintenance level. The implementation of the maintenance functions upon the end item mponents will be consistent with the assigned maintenance functions.

c. Section III lists the tools and test equipment required for each maintenance function as referen m Section II (Not Applicable).

2. EXPLANATION OF COLUMNS IN SECTION II

a. Column (1), Group Number. Column 1 lists group numbers to identify related compone emblies, subassemblies, and modules with their next higher assembly. The applicable groups are listed e MAC in disassembly sequence beginning with the first group removed.

b. Column (2), Component/Assembly. This column contains the noun names of compone emblies, subassemblies and modules for which maintenance is authorized.

c. Column (3), Maintenance Functions. This column lists the functions to be performed on the i ed in Column 2. The maintenance functions are defined as follows:

(1) Inspect. To determine serviceability of an item by comparing its physical, mechanical ctrical characteristics with established standards through examination.

(2) Test. To verify serviceability and to detect incipient failure by measuring the mechanica ctrical characteristics of an item, and comparing those characteristics with prescribed standards.

(3) Service. Operations required periodically to keep an item in proper operating condition, clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids mpressed air supplies.

(4) Adjust. To maintain within prescribed limits, by bringing into proper or exact position, o tting the operating characteristics to specified parameters.

(5) Align. To adjust specified variable elements of an item to bring about optimum or des rformance.

(6) Calibrate. To determine and cause corrections to be made or to be adjusted on instrument st measuring and diagnostic equipments used in precision measurement. Consist of comparison of struments, one of which is a certified standard of known accuracy, to detect and adjust any discrepa

a part, sub-assembly, module (component or assembly), end item, or system.

(10) Overhaul. That maintenance effort (service/action) necessary to restore an item
mpletely serviceable/operational condition as prescribed by maintenance standards in appro
hnical manuals. Overhaul is normally the highest degree of maintenance performed by the A
erhaul does not normally return an item to a like new condition.

(11) Rebuild. Consists of those services/actions necessary for the restoration of unservic
uipment to a like new condition in accordance with original manufacturing standards. Rebuild i
hest degree of material maintenance applied to Army equipment. The rebuild operation includes th
returning to zero those age measurements (hours/miles, etc.) considered in classifying A
uipments/components.

d. Column (4), Maintenance Level. This column is made up of sub-columns for each categor
intenance. Work time figures are listed in these sub-columns for the lowest level of mainte
horized to perform the function listed in column 3. These figures indicate the average active
uired to perform the maintenance function at the indicated category of maintenance under typical
erating conditions.

e. Column (5), Tools and Equipment. This column is provided for referencing by code, the com
l sets (not individual tools) special tools, test and support equipment required to perform the desig
ctions (Not Applicable).

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	(5) TOOLS AN EQUIPMEN
	HOUSING							
	Panels, Grills	Inspect	X					
		Repair		X				
		Replace		X				
		Adjust	X					
		Service	X					
	Drains	Inspect	X					
		Service	X					
	FILTER							
	Air Filter	Inspect		X				
		Service		X				
		Replace		X				
	ELECTRIC MOTOR AND FANS							
	Motor	Inspect		X				
		Test		X				
		Repair		X				
		Replace		X				
	Fans	Inspect		X				
		Repair		X				
		Replace		X				
	STARTING AND PROTECTIVE DEVICE							
	Switches	Inspect	X					
		Test		X				
		Replace		X				
	Capacitors	Test		X				
		Replace		X				
	Start Relay	Test		X				

9,000 BTU/HR Conventional Air Conditioner

(1) GROUP NUMBER	(2) COMPONENT ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL C	O	F	H	D	TC EC
05	WIRING							
	Misc. Wiring	Inspect		X				
		Test		X				
		Repair		X				
		Replace		X				
06	GAS COMPRESSOR, PIPING AND COMPONENTS							
	Compressor	Inspect (1)		X				
		Test			X			
		Service			X			
		Repair			X			
		Replace			X			
	Refrigerant Piping and Service Valves	Inspect (1)		X				
		Test			X			
		Repair			X			
		Replace			X			
	Evaporator Coil	Inspect		X				
		Service		X				
		Test			X			
		Repair			X			
		Replace			X			
	Condensor Coil	Inspect		X				
		Service		X				
		Test			X			
		Repair			X			
		Replace			X			
	Dehydrator	Replace			X			

Note 1	Inspect components externally only.

COPE

pendix I lists additional items you are authorized for the support of the air conditioner.

ENERAL

st identifies items that do not have to accompany the air conditioner and that do not have to be in with it. These items are authorized to you by CTA, MTOE, TDA or JTA.

XPLANATION OF LISTING

al stock number, descriptions, and quantities are provided to help you identify and request the nal items you require to support this equipment. "USABLE ON" codes are identified as follows:

Code	Used On
	Not Applicable

Section I. INTRODUCTION

E-1. SCOPE

This appendix lists expendable supplies and materials you will need to operate and main conditioner.

These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Clas Parts and Heraldic Items).

E-2. EXPLANATION OF COLUMNS

a. Column 1, Item Number. This number is assigned to the entry in the listing and is refere narrative instructions to identify the material (e.g., "Use cleaning compound, item 5, App. D").

b. Column 2, Level. This column identifies the lowest level of maintenance that require item.

C - Operator/Crew
O - Organizational Maintenance
F - Direct Support Maintenance
H - General Support Maintenance

c. Column 3, National Stock Number. This is the National stock number assigned to the ite request or requisition the item.

d. Column 4, Description. Indicates the Federal item name and, if required, a description the item. The last line for each item indicates the part number followed by the Federal Suppl Manufacturer (FSCM) in parenthesis, if applicable.

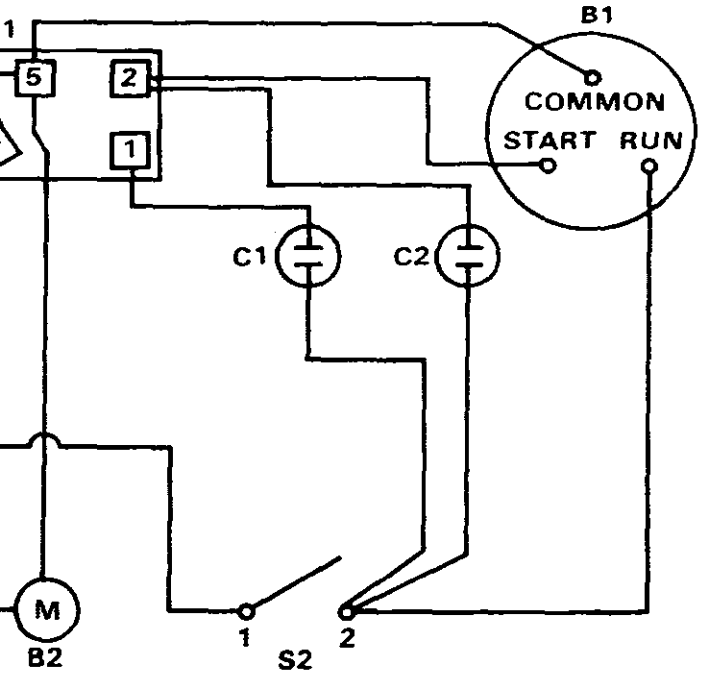
e. Column 5, Unit of Measure (U/M). Indicates the measure used in performing the actual m function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). of measure differs from the unit of issue, requisition the lowest unit of issue that will s requirements.

1	O		Coater, Air Filter
2	O		Dry Cleaning Solvent, P-D-680
3	O		Dry Cleaning Solvent, P-S-661
4	O		Adhesive
5	F		Refrigerant

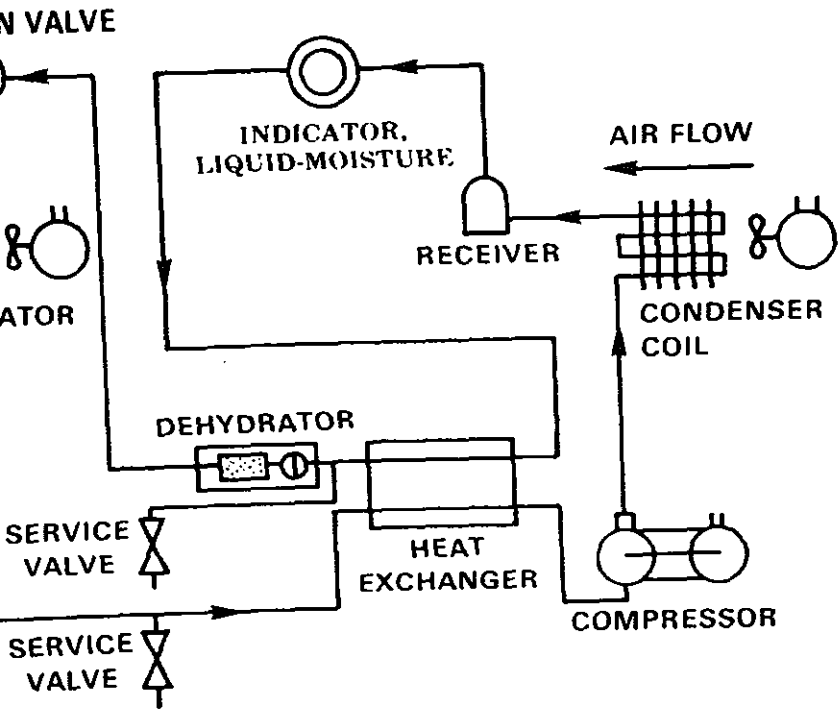
ng diagram for the air conditioner is shown in figure F-1.

FRIGERANT SYSTEM DIAGRAM

gerant system diagram for the air conditioner is shown in figure F-2.



REF DES	COM REFER DESCRIPTION
S1	SELECTOR SW
B1	COMPRESSOR
S2	THERMOSTAT
C2	RUN CAPACIT
C1	START CAPAC
K1	START RELAY
B2	A.C. MOTOR



| C
REF |
| --- |
| DESCRIP |
| COMPRESS |
| CONDENSE |
| EVAPORAT |
| EXPANSIO |
| DEHYDRAT |
| RECEIVER |
| SERVICE V |
| SERVICE V |
| INDICATOR |
| LIQUID-MO |

REFR
3 lb R

Figure F-2. Refrigeration diagram.

P

R

S

T

V

W

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

TRIBUTION:
o be distributed in accordance with DA Form 12-25C, Operator Maintenance
uirements for Environmental Equipment, Air Conditioners, 9,000 BTU.

TM 5-4120-341-13	13 Mar 81	PUBLICATION TITLE Air Conditioner 9,000 BTU/HR Hottel Model HAC-751

BE EXACT PIN-POINT WHERE IT IS				IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	
6	2-1 a			In line 6 of paragraph 2-1a the manual states the engine has 6 Cylenders. The engine on my set only has 4 Cylenders. Change the manual to show 4 Cylenders.
81		4-3		Callout 16 on figure 4-3 is pointing at a bolt. In key to figure 4-3, item 16 is called a shim - Please correct one or the other.
125	line 20			I ordered a gasket, item 19 on figure B-16 by NSN 2910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got what I ordered so the NSN is

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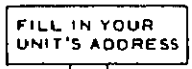

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Weights

ntigram = 10 milligrams = .15 grain
ecigram = 10 centigrams = 1.54 grains
ram = 10 decigram = .035 ounce
kagram = 10 grams = .35 ounce
ectogram = 10 dekagrams = 3.52 ounces
logram = 10 hectograms = 2.2 pounds
uintal = 100 kilograms = 220.46 pounds
etric ton = 10 quintals = 1.1 short tons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. fe
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inche
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*M*
hes	centimeters	2.540	ounce-inches	newton-meters	.7
	meters	.305	centimeters	inches	
ds	meters	.914	meters	feet	
s	kilometers	1.609	meters	yards	
are inches	square centimeters	6.451	kilometers	miles	
are feet	square meters	.093	square centimeters	square inches	
are yards	square meters	.836	square meters	square feet	
are miles	*square kilometers*	2.590	*square meters*	*square yards*	
s	square hectometers	.405	square kilometers	square miles	
ic feet	cubic meters	.028	square hectometers	acres	
ic yards	cubic meters	.765	cubic meters	cubic feet	
d ounces	milliliters	29.573	cubic meters	cubic yards	
s	liters	.473	milliliters	fluid ounces	
rts	liters	.946	liters	pints	
ons	liters	3.785	liters	quarts	
ces	grams	28.349	liters	gallons	
nds	kilograms	.454	grams	ounces	
t tons	metric tons	.907	kilograms	pounds	
nd-feet	newton-meters	1.365	metric tons	short tons	
nd-inches	mewton-meters	.11375			

Temperature (Exact)